# TECHNOLOGY REVIEW

January 1954

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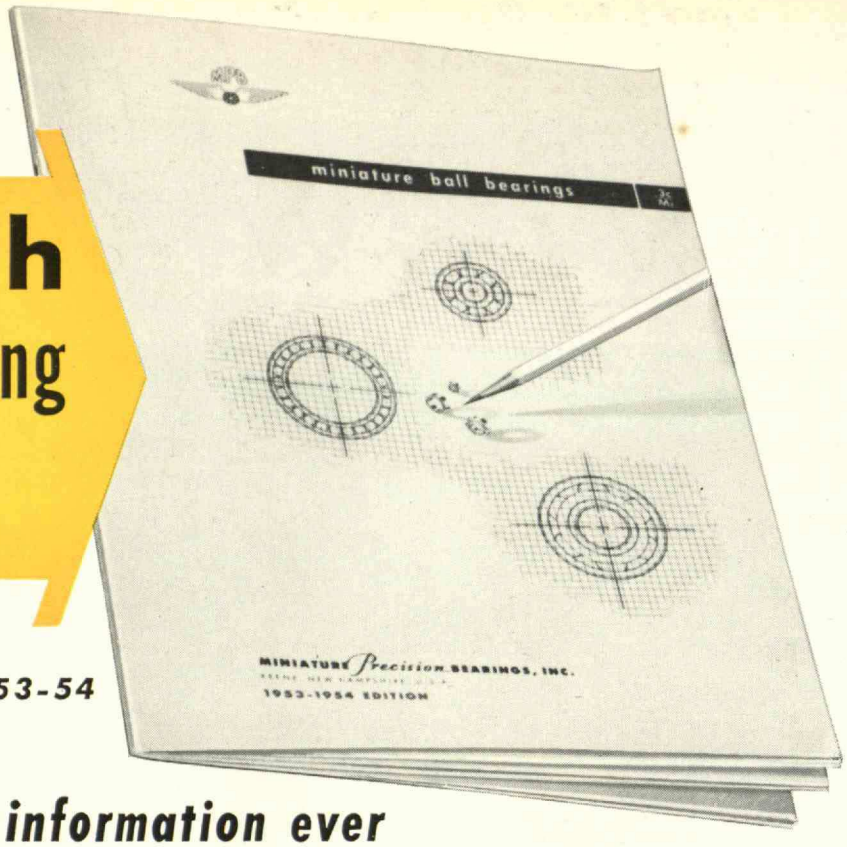


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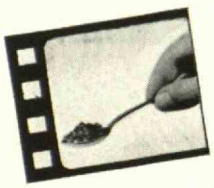

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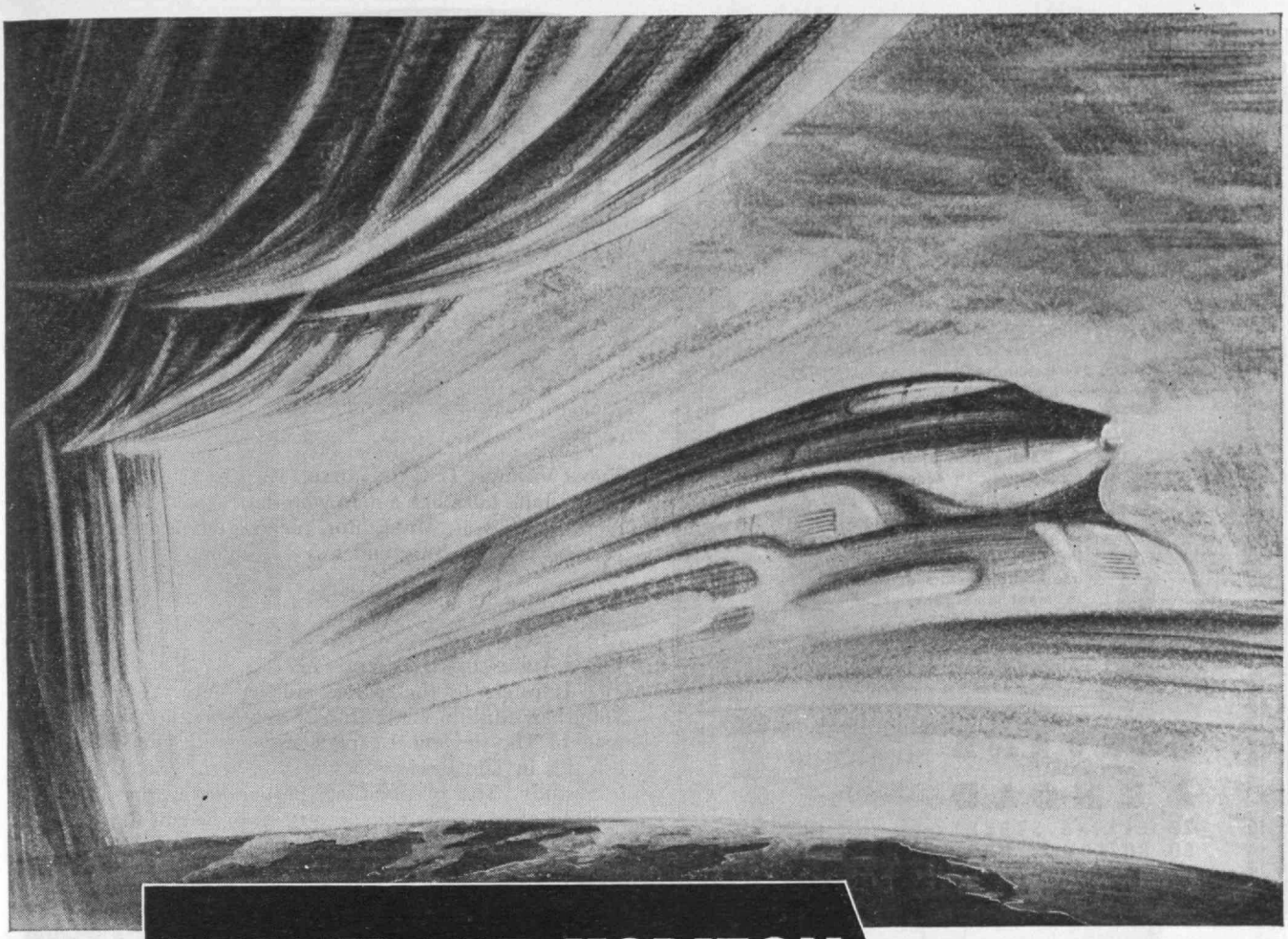
# THE TABULAR VIEW

**Mentor's Monition.** — The Review is happy to bring to its readers the seventh Arthur Dehon Little Memorial Lecture entitled "Psychology, the Machine, and Society" (page 141) by LEONARD CARMICHAEL, Secretary of the Smithsonian Institution. In a study of man's relation to the technological era which he has built up, Dr. Carmichael clearly points out that although science has "given great sections of modern man a high standard of living and an opportunity to provide themselves a life of health and comfort," progress in understanding man's inborn and acquired make-up is important for a valid understanding of modern society and technology. To this end Dr. Carmichael believes that "education fitted to the aptitudes of each individual is a most promising tool." As a psychologist interested in applying the methods of his science to the problems of behavior, Dr. Carmichael has directed his talents over a wide range of investigation and endeavor since Harvard University awarded him the degree of doctor of philosophy in 1924. After a year in Germany as a Sheldon Traveling Fellow, he joined the Department of Psychology at Princeton University. He was elected to the chairmanship of the Department of Psychology at Brown University, served two years as Dean of the Faculty of the University of Rochester, and returned to Tufts College as president in 1938. He became secretary of the Smithsonian Institution on January 1, 1953.

**Ill-fated Interference.** — In their attempts to cover a great detail of material in reasonably compact form, historians frequently neglect the role which epidemics and disease have played in changing the course of history. But ill-fated interference from yellow fever was a significant factor in changing the map of the United States a century and a half ago, as JAMES A. TOBEY, '15, reminds us (page 145). Dr. Tobey received the S.B. and Dr.P.H. degrees from M.I.T. in 1916 and 1927 respectively, the LL.B. degree from Washington Law School in 1922, and the M.S. degree from the American University in 1923. He is author of *Public Health Law* and has been a frequent contributor to The Review. Dr. Tobey has also served as a colonel in the Army's Medical Service in Texas.

**Tile Technology.** — This issue brings to Review readers (page 147) the first of a two-part article on "Decorative Tiles — Their Place in Ceramic Art" by E. STANLEY WIRES, '07. Much of the world's history, art, technology, and culture may be traced through the tile fragments coming to us from the world's earlier civilizations. Mr. Wires was treasurer and manager of the E. Stanley Wires Company, Inc., in Boston between 1908 and 1944, and has been New England sales manager for the Cambridge Tile Manufacturing Company from 1945 to 1952. He is past director and vice-president of the Tile and Mantel Contractors Association of America, and past chairman of the Tile Industry Research Bureau, Department of Ceramics, Rutgers University.



# BEYOND THE HORIZON....

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# MAIL RETURNS

## Reaction to "Suburban Life"

*[Seldom — if ever — has an article in The Review evoked as much comment as "An Appraisal of Suburban Middle Class Life" by Julian A. Joffe, '24, in the November, 1953, issue. As a result of Mr. Joffe's article, The Review Office is already in receipt of a second manuscript on suburban living, and — by long-distance telephone — still another manuscript refuting Mr. Joffe's views has been proposed. But perhaps the fact that the pages of The Review are thoroughly read is best attested by the following extracts from letters in which Alumni comment on Mr. Joffe's observations. — Ed.]*

☆ ☆ ☆

FROM VINCENT L. GALLAGHER, '12:

Mr. Joffe talks like a man who didn't make the country club. As for you, Mr. Editor, please give us more of the Moreell type of copy and less — no, none — of the Joffe type.

*New York 6, N. Y.*

☆ ☆ ☆

FROM AUGUSTUS B. KINZEL, '21:

This refers to the article entitled "An Appraisal of Suburban Middle Class Life" printed in the November issue of The Review. I cannot understand why you publish this in The Review or why you dignify it by calling it a study. The observations pertain to a very limited number of parvenus who are just as prevalent in the city as they are in the suburbs. Certainly it is full of general statements without any supporting evidence, the implication being that the statements refer to the great majority of suburbanites in a particular income group. A few facts which could be readily obtained from the Association of University Women and the League of Women Voters will completely dispel the thought that Julian A. Joffe is dealing with such a majority.

*New York 17, N. Y.*

☆ ☆ ☆

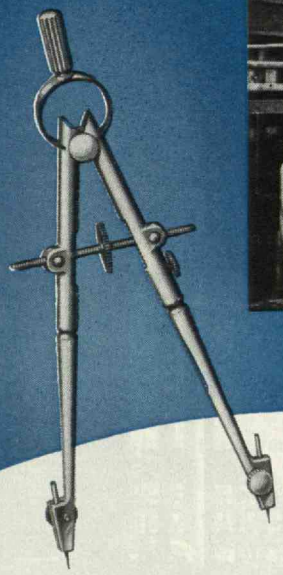
FROM J. BRYANT WILLIAMS, JR., '47:

I enjoy the articles in The Review. Julian A. Joffe's "An Appraisal of Suburban Middle Class Life" (November, 1953) presented an interesting view of life today.

*Greenwich, Conn.*

# Naphtachimie

## *in production with new* SD *process*



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**HISTORY REPEATS**—Now, just twenty years later, Carbide has received the 1953 Chemical Engineering Achievement Award for "the first successful production of chemicals from coal by a high pressure hydrogenation process."

In minutes, coal becomes gases and liquids rich in needed chemicals—"one of the major contributions in this century to the well-being of us all."

Some of these chemicals are used in making plastics, synthetic rubber, pharmaceuticals, vitamins, and many other things. Others are completely new and hold great promise.

**FOURTH RECOGNITION**—Carbide is the first two-time individual recipient of this award. It also is the fourth time the people of Carbide have been recognized, for they shared in two previous group awards—in 1943 for synthetic rubber, and in 1946 for atomic energy.

**TRUE SIGNIFICANCE**—As in all Chemical Engineering Achievement Awards, coal hydrogenation was recognized not as the accomplishment of any one individual but as the result of the cooperative efforts of many.

The people of Union Carbide appreciate the recognition of their achievement by the distinguished Committee of Award, composed of senior chemical engineering educators.

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LINDE Oxygen
NATIONAL Carbons
ACHESON Electrodes

# What General Electric people are saying . . .

## J. W. BELANGER

*Mr. Belanger is Vice President, Defense Products Group*

. . . The significance of the nuclear-powered submarine is that it brings to reality the world's first working atomic power plant—a forerunner of useful atomic power for merchant ships, airplanes, and the generation of electrical power for industry, farms, homes, and many applications for peaceful living.

By the year 2000, nuclear fuels will be the major sources of energy, regardless of whether fossil fuels are seriously depleted.

Fission (splitting atoms with release of energy) and fusion (combining atoms with release of energy) will both be major sources of nuclear power—fission for controlled power sources, and fusion for explosive-type sources.

By the end of the present century, most of the new large utility plants generating electrical energy for homes and industry will operate with atomic (fission) fuel.

The direct generation of electricity from fission is an open question. Who would dare to deny that even it might be commonplace in 50 years?

Solar fuels must also be taken into consideration in any projection that far ahead.

What will this mean to our way of living? Atomic plants will be safe enough to be located within city limits. Residents of Los Angeles and other low-rainfall coastal areas will probably sprinkle their lawns and wash their clothes in fresh water, distilled from ocean water by heat from atomic fuels.

The rapid development of nuclear energy will have advanced the study of many new materials particularly suited for nuclear energy use, but having many other applications. Neutron spectrometry, radioactive logging of borings, widespread use of tracers in industrial processes, employment of radioactive materials in medicine, biology, agriculture and other diagnostic work—these are but a few of the many avenues which may mean little to the average reader at this time, but which on the other hand do mean a great deal to men of science.

*Monogram Magazine*

## D. L. MILLHAM

*Mr. Millham is Vice President and General Manager, Lamp Division*

. . . There has been a newly awakened realization among electric utilities and electrical equipment suppliers of the broad undeveloped market in the lighting field—particularly home lighting.

Electrical consumption for residential lighting has tripled in the past 10 years but even so only a very small percentage of homes are lighted properly. We found in a recent survey that at the present rate of improvement, it would take residential lighting 100 years to reach the standards already prevailing in many stores and offices.

More and more people are becoming aware of the advantages of good lighting for schools, offices, streets, industry, autos and even airplanes. They enthusiastically appreciate its contributions to beauty, to comfort and safety, and to eye protection of the whole family.

It is up to us to continue to explore new frontiers of lighting knowledge, and to manufacture better products which translate this knowledge into better living for more people.

*at Nela Park, Cleveland*

*General Electric has recently published a booklet entitled WHY STUDY MATH. Written for high school students, it points out the value of mathematics in everyday life, and the necessity of mathematical training for anyone interested in a career in the expanding fields of science and engineering. If you would like a copy, or would like us to send a copy to someone for you, write General Electric Co., Room 2-111, Schenectady, N. Y.*

## W. R. G. BAKER

*Dr. Baker is Vice President and General Manager, Electronics Division*

If I were to have anything to say about programming of an educational television station, I would insist that fully half the effort be expended in finding ways and means of inspiring not only the youths but also the adults to extend, continue or renew their education. Don't misunderstand me. I'm not saying that education itself cannot be inspirational. One of the benefits of educational television is that it enables the outstanding educator, or teacher or instructor to inspire thousands and not just a score, or a few hundred at most.

Many obstacles remain in the path of educational television before it will be proven successful. Besides indifference and active opposition, there will be considerable disagreement as to what should be presented to the public and how it should be presented. But these problems are not insurmountable.

I believe that educational television will succeed in the United States because there is unceasing pressure for greater educational opportunities. There is an awareness and a recognition by almost all persons that through education the ills of mind and spirit, yes, and even of ideologies, can be cured or prevented. So much has been accomplished in a few short years. The strides we have made in science and medicine have been giant strides, but we hear no one echoing the sentiments of the man who decades ago urged that the patent office be abolished, because all possible inventions had been made. We have today an even greater awareness of how much we still have to learn and how great the benefits will be to all people.

*at The Chicago Educational Television Association*


## *to date ... there are 30!*

Here you see a giant absorber tower of special alloy—just one of Graver's expert fabrications at Tuscola, Illinois. Already there are more than 30 Graver-built structures, including both vessels and tankage, that operate as part of this great, new multi-million dollar installation of National Petro-Chemicals Corporation.

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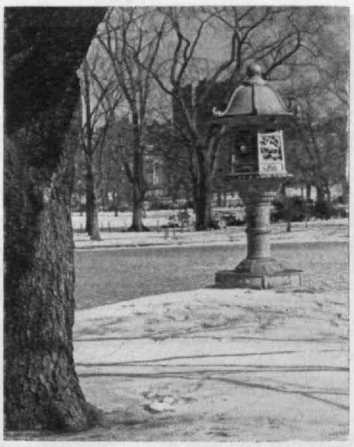
**Process Vessels**

*Welles Bosworth's name (December Contents page), in honor of the noted architect who designed the Institute's educational buildings when M.I.T. moved to Cambridge, is carved on Building 10.*



*Raymond E. Hanson*

***How Well Do You Know Boston?***

*This Sixteenth Century antique has been seen by thousands of Bostonians on afternoon strolls. Do you know what it is and where it is located? If not, see Contents page for February.*


# THE TECHNOLOGY REVIEW

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*EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY*


## CONTENTS *for January, 1954*


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*M.I.T. Photo*

## *Let There Be Light!*

*What is believed to be the largest suspended electrical lighting unit ever installed is now serving the Engineering Library at the Institute. It hangs 51 feet below the skylight of M.I.T.'s great dome in the room which served as the Central Library until completion of the Charles Hayden Memorial Library Building. The dome now houses the Institute's collection of engineering subjects.*

*The new lighting unit consists essentially of a great dish of corrugated translucent plastic 48 feet in diameter, above which are mounted 236 fluorescent lamps, using about 14 kilowatts of power. The unit, which weighs 16 tons in all, hangs from a framework of steel attached at 12 points to the structural concrete of the dome. In addition to lamps and diffuser, the fixture includes 28 light metal hollow acoustical baffles, each 16 feet long. It is suspended 14 feet above the library floor.*

*While delivering vastly better illumination to the reading tables in the Engineering Library, the new fixture uses less power than was required for the glass chandelier and floodlights previously used. The lighting unit was designed by Professors Lawrence B. Anderson, '30, and Herbert L. Beckwith, '26, of the M.I.T. Department of Architecture, in co-operation with the F. W. Wakefield Brass Company of Vermilion, Ohio.*

THE
TECHNOLOGY
REVIEW

Vol. 56, No. 3 January, 1954

# The Trend of Affairs

## *Sinister*

THE human being frequently finds it expedient to conform to the average. Thus the advantage of being average in size was told in the November, 1952, issue of The Review.* Another human attribute where conformance with the majority is a decided advantage is that of handedness. Most people are right-handed, and the world is designed for them. Children who exhibit left-handed tendencies encounter contrary pressure from parents and teachers who, besides the common human impulse to hammer youth into the mold of uniformity, know in their adult wisdom that left-handedness may be some degree of handicap when maturity is reached.

Left-handedness may or may not be an occupational handicap, depending upon the job. Most desk work can be done equally well with either hand. The left-handed policeman needs merely to provide himself with a left-handed revolver holster, readily available. Hammers, screw drivers, wrenches – many of the tools of the mechanical trades – can be used with equal facility with either hand; hence sending someone for a "left-handed monkey wrench" is an outworn joke. But left-handedness is no joke to a tailor, for left-handed shears are hard to find and expensive.

Prime example of a profession where left-handedness is a substantial handicap is that of the dentist. In order to grasp the flexible shaft drill with his left hand, a dentist must stand beside the patient's left hand; in other words, on the opposite side of the dental chair from the usual position. Therefore, in the southpaw dentist's office, all of that bristling array of plumbing and apparatus that surrounds the chair must be reversed from its usual location. Part of this reversal requires special castings and other special parts. Although the left-handed dentist can obtain such equipment from dental supply houses, he pays a premium for it. Also he has difficulty getting his training, because practically all of the equipment in dental schools and dental clinics is right-handed. Incidentally the Armed Services find left-handed dentists a problem, as Army or Navy dentists must use equipment in existing installations, and this is all right-handed.

The Armed Services have now shed new light upon left-handedness, from questionnaires filled out by Selective Service registrants that asked "Are you right-handed or left-handed?" The registrant's reply on the questionnaire was accepted, with no objective test of handedness being given.

An analysis of about 12,000 of these Selective Service questionnaires has recently been published. Of the registrants, 8.6 per cent stated that they were left-handed. Although this percentage cannot be projected to the total population, because these registrants are all young adult males, it leaves no doubt that left-handedness is definitely a minority attribute. Nevertheless this proportion, although a minority, is far from insignificant.

An intriguing finding of the analysis of Selective Service questionnaires came from a comparison of the incidence of left-handedness in men accepted for military service, as against those disqualified. Of the accepted men 7.9 per cent said they were left-handed; of those disqualified, 10.1 per cent. This difference was demonstrated to be statistically significant. Since left-handedness itself is not grounds for disqualification, the question is raised – but in no way answered – as to why this difference existed.

Manifestly left-handedness is common enough to merit careful attention by teachers and vocational counselors. Additional studies of this attribute, done with objectivity and statistical exactitude like the Selective Service study cited, are needed to foster the occupational welfare, perhaps even the general social orientation, of the world's southpaws.

* Frederic W. Nordsiek, "No Virtue Goes with Size," The Technology Review, 55:27.

## *Vertical Integration*

For many years the question of divorcing the marketing of petroleum products from the business of producing, refining, and transporting these products has been debated. Oil marketing divorcement bills were introduced in Congress in 1937, 1938, 1939, and 1949. In 1940, the Antitrust Division of the Department of Justice filed the so-called Mother Hubbard Suit against 22 integrated companies, 345 affiliates, and the American Petroleum Institute which, in general terms, laid the groundwork for divorcement. The case was not tried because of the war, and after World War II the Antitrust Division decided to abandon the Mother Hubbard Suit and substitute in its place regional suits containing more specific charges against fewer companies.

Accordingly, in May, 1950, the Antitrust Division commenced a suit against seven integrated oil companies on the West Coast, charging them with conspiracy to restrain competition and to monopolize the production, refining, transportation, and marketing of crude oil and refined petroleum products in the Pacific Coast area. One of the requests, made in this action, calls for the divorcement of marketing from the other branches of the industry. The future course of antitrust policy with respect to marketing divorcement will depend largely upon the outcome of this suit.

As part of a program of providing basic research on business problems which businessmen themselves are not in a position to undertake, a study has been undertaken of vertical integration in the oil industry. The primary question for which an answer has been sought is: Will oil marketing divorcement be economically sound from the point of view of (1) the jobber, (2) the integrated oil company, (3) the public? The study is directed by James S. Cross, Assistant Professor of Marketing, with the assistance of Robert F. King, '52, technical assistant, and is financed through the Sloan Research Fund of the Institute's School of Industrial Management.

The integrated oil company cannot recover profits in other segments of its business which, by design or otherwise, are lost in marketing, except by driving jobbers out of business and recovering these profits at a later date through monopoly prices. There is no evidence that integrated oil companies have undertaken a planned program of eliminating jobbers from the field of petroleum distribution.

It is true that the existence of the integrated structure brings about a drive for volume which may be over and above that which the prudent businessman would seek if he were engaged in marketing alone. When the integrated company is operating at a fraction of capacity or has excess products on hand because of seasonal overproduction, there is an incentive to expand sales by increasing selling costs or reducing price, thereby lowering unit costs by spreading overhead. Expanding sales in this manner is profitable until marginal costs equal marginal revenue.

Because of certain advantages of integration in the petroleum industry, the cost to the public of abandoning integrated channels of distribution would probably be substantial. In particular, the advantages of continuous flow of petroleum products, the stabilizing influence of integration, the greater possibilities for over-all planning and control, the elimination of duplicated effort, and the drive, peculiar to integration, toward cost-saving methods are important sources of efficiency in petroleum distribution.

## *Thermal Conductivity*

With the steadily increasing need to operate heat engines and other technological devices at higher and higher temperatures, a number of important design and construction problems have arisen. When temperatures become sufficiently high, metals can no longer be used, and are replaced by ceramics. The need for stable refractory materials of construction for nuclear piles, gas turbines, turbo-jet engines, rockets, and other mechanisms operating at high temperatures emphasizes the need for accurate knowledge of the thermal conductivities of the pure oxide refractories.

An extensive search of the literature reveals that very little data have been published on the thermal conductivity of pure refractory oxides. Moreover, wide divergence of absolute values exists in the published data. Much more accurate data are required for design purposes than has heretofore been available. Accordingly, a new absolute method for determining the thermal conductivity of refractory materials under steady state conditions has been devised at the Institute's Ceramics Laboratory. The project has been sponsored by the Atomic Energy Commission, and research has been conducted by Milton Adams, graduate student in the Department of Metallurgy.

In this investigation, a hollow prolate, spheroidal, ceramic specimen was heated internally by electrical resistance, and the temperatures at two points along the minor axis within the sample were measured by thermocouples. The thermal conductivity may then be expressed in terms of units of heat generated per unit of time, over unit area, for a temperature gradient of one degree per unit of length of heat flow. To insure unidirectional heat flow for proper measurements, the heater core must be so constructed as to generate heat uniformly along the axis of rotation of the sample, and the specimen must be designed and shaped so that its inner and outer surfaces are confocal with the surface of the core. A platinum-wound core was used as a heating element and insulating firebrick was employed as an insulating cover for the specimen. Measurements are believed to be accurate to within 5 per cent of absolute value.

The variation of thermal conductivity with temperature was found for alumina, beryllia, magnesia, thoria, zirconia, and insulating firebrick Babcock and Wilcox K-28. Alumina thermal conductivity decreases from 0.0225 at 500 degrees C. to 0.0125 at 1300 degrees C.; beryllia decreases from 0.17 at 400 degrees C. to 0.040 at 1200 degrees C.; magnesia decreases from 0.040 at 400 degrees C. to 0.014 at 1300 degrees C.; thoria decreases from 0.014 at 300 degrees C. to 0.005 at 1300 degrees C.; zirconia is practically linear from 0.004 at 100 degrees C. to 0.005 at 1300 degrees C.; and insulating firebrick Babcock and Wilcox K-28 increases from 0.00063 at 300 degrees C. to 0.001 at 750 degrees C.

# Psychology, the Machine, and Society

***To Attain a Better State, We Must Spend More Energy and Thought Than in the Past on Improving the Quality of Instruction We Offer Young Persons***

By LEONARD CARMICHAEL

Last spring in the sky over Korea when a pilot in one of our fast jet airplanes sighted an enemy jet approaching, he had to respond quickly, if at all. The human eye-nerve-muscle system requires at least one-fifth of a second to operate after such stimulation. If a directional movement trend in another airplane is to be estimated, a much longer time is needed. During the period required for effective human response, two jets move hundreds of feet from where they were when the stimulation was initiated. In 1909 at the first Gordon-Bennett air race the winning airplane averaged just over 47 miles per hour. Today airplane speeds of more than 15 times this rate are not uncommon, whereas the average speed of the operation of the human sense organs, brain, and muscles has not changed in these years. Indeed, it is very doubtful whether the best human reaction time of an ace pilot of the Korean war was different from that of a leading archer of the New Stone Age, when the bow and arrow had just been developed by the neolithic counterpart of our Atomic Energy Commission of the Twentieth Century.

There is, thus, a hard reality behind some of the present-day lurid science fiction: Men have now made machines that are challenging the inborn anatomical and mental limitations of their masters. Furthermore, in the past few years increase in speed of travel, ease of world communication, potential military destructiveness, and the eradication and control of disease have violently upset the slowly evolved balance of the ages between the individual and his material and social world. These facts emphasize the need for a scientific consideration of man's fixed and sometimes inborn physiological and psychological capacities, in relation to novel and ingenious machines, to newly released energy sources, and especially to political and economic systems that are now so rapidly transforming the world.

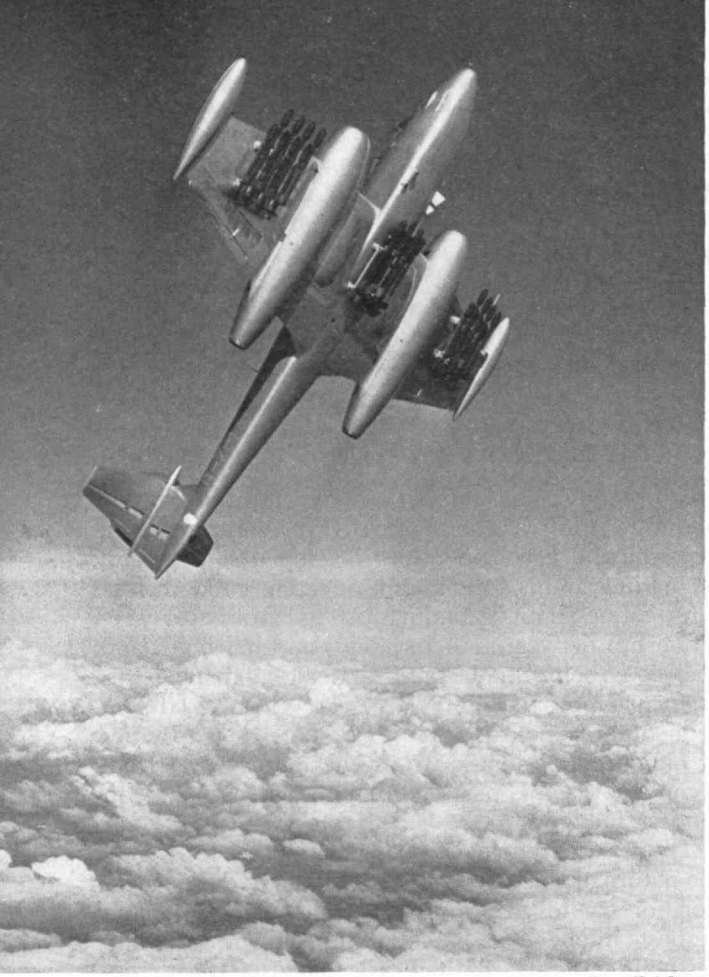
Man has studied and speculated about his nature for many centuries. Probably ever since he first saw his reflection in a prehistoric pool he has wondered about himself. Throughout the ages, theologians, lawyers, physicians, philosophers, poets, mythmakers, and more recently anthropologists, psychiatrists, geneticists, physiologists, sociologists, and many other specialists, as well as psychologists, have pondered aspects of the great question: "What is man?" None has yet produced the final answer. Not even the most ardent present-day advocates of the usefulness of psychology would dream of maintaining that this one area of study alone can ever give a full reply to this obdurate riddle of the Sphinx. Nevertheless, modern experimental psychology has developed some useful techniques and is still obtaining factual, fundamental information about human nature. The present-day relationship between human beings and machines and society is being made more understandable by this science in more than a few respects. When the student of mental reactions is asked, "What are the capacities of human individuals?" his answer today is far from complete, but it is possible to approach an answer in modest, factual terms.

The wise psychologist does not attempt to predict the nature of the end products of human artistic creation, or try to determine the boundaries of man's highest intellectual potentialities or spiritual and aesthetic insights. Rather, psychologists try to describe, wherever possible in quantitative terms, basic mental processes, which are often shown to be related to the anatomical and physiological living machinery of a unique primate called Homo sapiens.

Many questions similar to the following can be asked and to a limited degree answered by scientific psychology: What is the average difference between man's fastest reaction to a sound and to a light? How fast and how accurately can different human individuals learn specific items of information, such as series of numbers? How rapidly does forgetting of specific new associations take place? How do individuals vary in the composite of abilities, sometimes called intelligence? What are the typical changes in the expression of emotion as an individual grows from babyhood to adult life? What is the effect of sleep deprivation on skilled motor performance? How is language related to thought?

The extent of new knowledge in this field is illustrated by a *Handbook of Human Engineering Data*[1] recently published by Tufts College psychologists under contract with the Navy. This book, which has the external dimensions of the New York City telephone directory, is a compilation of the present state of useful psychological facts about the measurable traits and abilities of human beings. Its pages give hundreds of tables and graphs representing the results of experimental study of specific aspects of mental capacity. Many of the tables show averages and also give extremes of variation. In such studies of human mental characteristics, individual differences are rec-

[1] *Handbook of Human Engineering Data for Design Engineers* (Medford: Tufts College, 1949).



*Russell Adams*

*Men have now made machines that are challenging the inborn anatomical and mental limitations of their masters.*

ognized as important. There is no better established fact about men, women, and children than that variation is the most invariable law of nature. The amazing range of human capacity in any population is one of the first facts to be recognized by one who is concerned with making better machines for human operators or even with speculation about social, political, or economic theory or reform.

In general, therefore, the information made available as a result of experimental psychology is fundamental in concrete thinking concerning the present-day changing relationships between man and his world. The engineer who builds a new Diesel locomotive is limited by the properties of the materials he uses. The weight, tensile strength, heat resistance, elasticity, and other characteristics of the metals he employs do not predetermine the shape into which the material is to be fabricated. On the other hand, parts of such engines cannot be made of metals that have other than very specific characteristics. The same relationship holds for one who would consider how modern machines and present-day society are related to the inborn traits of every human being. "Which of you by taking thought can add one cubit unto his stature?"[2] also applies to other characteristics besides height. The jet pilot, already referred to, cannot by thought, education, or wishing speed up beyond a certain fixed point the time his nerves must take in responding to external stimuli. Anyone concerned with the construction of new airplanes or with training pilots to fly such airplanes in formations, or with developing a better political or economic system, must not forget that physiologically and psychologically men have a large number of inborn capacities and many specific limitations.

As a first conclusion of this paper, therefore, may it be suggested that a modern and effective understanding of men will certainly involve a number of levels of study? Among the types of information that will be required in considering man's complex relationships to his total environment will be as accurate as possible a knowledge of the basic make-up of human beings.

This point of view was well expressed by Arthur D. Little,'85, in whose honor this lecture is named. He wrote: "Since most of the troubles that beset mankind have their origin in human nature, it would seem worth the while of those who make laws to study and apply the findings of the biologists and psychologists as to what human nature really is and what are the springs of its motivation." Though this was written 25 years ago, it is even more clearly true today than it was then.

Much more research in basic scientific psychology is therefore an urgent need of our age. "If only," says Professor Ivor A. Richards (Harvard University), "something could be done in psychology remotely comparable to what has been achieved in physics, practical consequences might be expected even more remarkable than any that the engineer can contrive. The first positive steps in the science of the mind have been slow in coming, but they are beginning to change man's whole outlook." Our educational system, too, may well be planned so that proper and adequate training in psychology may be given and so that enough able young men and women in each generation are allowed an opportunity to become experts in this field. Experimental psychology and human engineering have contributions to make to machine design and what is more important even to social understanding.

Let us now look at the second noun of our title — the machine. Many of the pleasant and interesting, as well as many of the alarming, characteristics of our age are a direct result of machines and of other new processes and procedures following upon man's growing understanding of pure and applied science. The past 15 decades have seen more developments which are based on quantitative and exact methods of studying nature than all preceding ages of history. During this period, in such societies as ours, science has made possible the release of man from drudgery in a way that was previously unthinkable. New sources of energy, and now atomic power itself, have been substituted for the old inefficient and painful work of human or animal muscles. Some great periods of the past were based upon the forced labor of mute human slaves. Today machines, our new and willing servants, relieve us from much of the relentless work that was accepted as inevitable by the unbroken line of our toiling ancestors.

Novel electronic systems are today being developed, for example, here at M.I.T., which will further lift the

[2]Matthew 6:27

curse of drudgery not only from man's biceps and triceps but even from his mind. If human beings by their social blundering do not bring on war or political chaos and thus capriciously spoil this process, we may logically hope that the technology of the present and future will be even more humanly valuable than it has been in the past. It must be remembered also that advances in medical and public health fields in the last generation have been without precedent. The average length of life has been increased and human beings have been relieved in an almost unbelievable way from much of their physical suffering, which, like muscular toil, had always before been accepted as the inevitable lot of all sons and daughters of Adam.

The support of research in pure and applied physical and biological science is thus eminently worth while. If society is to operate efficiently, the best modern psychological and personnel procedures must be used to discover in each generation those individuals who are best qualified to be educated so that they may in their turn carry on effective research and development in these fields. Such able individuals should also be encouraged to undergo the self-discipline and the training in mathematics and other basic fields of study required of those who are to do real research in science. This kind of preparation is absolutely essential to those who would wisely direct and maintain as well as develop the machines, processes, and services on which the modern world depends. Nature does not provide enough children in each generation who have oustanding mathematical and other academic aptitudes, as well as the personality characteristics necessary to become true modern scientists, to allow any to be wasted. It has been suggested that creative research of the highest order in the quantitative physical sciences can be expected only from selected individuals in the upper 2 per cent of the population in measured intellectual ability. Such rare and valuable talent bearers should be nurtured and helped to use their inborn capacities for the welfare of our scientifically based age. The world cannot afford to squander its scientific man power! It is particularly wasteful of human resources when individuals, recognized as singularly talented and perhaps well trained in certain scientific or technical specialties, are allowed or required either in military or civilian life to perform tasks that others can do as well or even better.

Dr. Little, again, saw with peculiar clarity the need of fostering able scientists. Men of science constituted for him a separate Fifth Estate in society. He said in a memorable paragraph: "This Fifth Estate is composed of those having the simplicity to wonder, the ability to question, the power to generalize, the capacity to apply. It is, in short, the company of thinkers, workers, expounders, and practitioners upon which the world is absolutely dependent for the preservation and advancement of that organized knowledge called science."

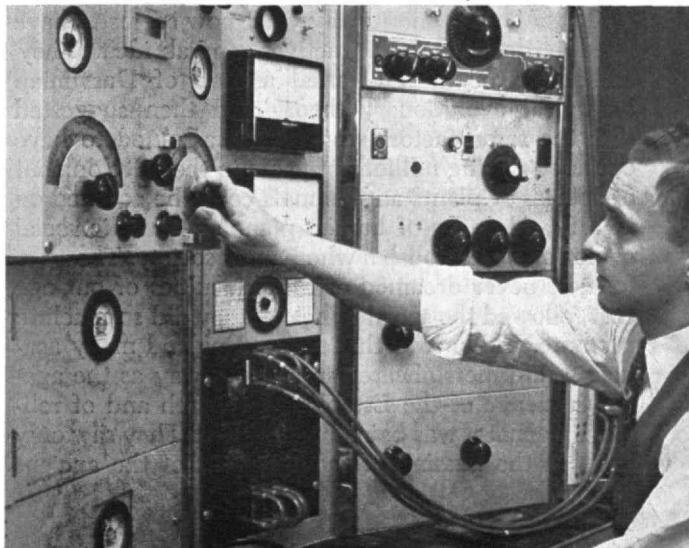
As a second conclusion of this paper, then, it may be suggested that society should give full attention to the discovery of human talent and to the effective education of promising leaders in pure and applied science and, it may be added, in other worth-while scholarly fields. That all men are not born equally able to use mathematics is but one of many facts that must be accepted by those who are to plan wisely and well for the education of our youth for effective service to society.

From time to time we hear the monstrous notion proposed that a moratorium on scientific research should be established. Those who make such suggestions mistakenly blame science for our present social ills. Can anyone, however, with clear eyes doubt that the world now needs more, not less, science, and a wider, not more restricted, recognition of its implications and importance?

Men still ask themselves over and over again: Why have human beings who have made such good machines and such progress in understanding the cause and cure of many human illnesses, failed in creating a just and stable national and world social order? The author of this paper knows that he cannot answer this great question, but he still believes that it is worthy of the best thought of all of us. In the first place, the fact that the world has not yet developed a thoroughly workable political and economic organization cannot be blamed upon the failure of many men to consider the matter. For centuries philosophers, statesmen, political scientists, aspiring dictators, and even glittering soldiers of fortune, like Napoleon, have thought and talked about the need for social and political change and improvement on a world-wide scale. Sometimes it almost seems that society has suffered not so much because it has failed to consider its own improvement but rather because it has been tampered with by too many would-be reformers. Many of these advocates of social change have not understood, or wanted to understand, what we have called in this paper the basic nature of human beings.

The kind of thinking that has been so triumphantly successful in developing purely mechancial systems has not always worked when applied hastily to man's relationship to man. Edmund Burke, who was certainly one of the outstanding political scientists and philosophers of the Eighteenth Century, emphasized this fact. He spoke of ignorant men who were not fools enough to meddle with their own clocks but who still felt free to advocate the taking apart of society,

*Bell Telephone Laboratories*



*Novel electronic systems are today being developed which will further lift the curse of drudgery for man.*

and the disrupting of its immemorial springs, balance, counteractions, and co-operating powers.

For years sociologists have said that in some respects society is like an organism. This analogy may be carried too far, but it does seem to be true that in old and well-established communities there is an almost organic unity in the structural pattern of social living. Successful, modern physicians do not try to create new organisms in the place of the patients they are called upon to treat. Medicine rather has learned to alter the processes that interfere with health and to recognize that a real cure is usually the result of restorative processes inherent in the body. These processes may be thought of as part of the body itself and have been produced by millions of years of organic evolution. This approach of the modern medical scientist may have a lesson for the social and economic reformer. Today, however, looking back at the social changes that have been advocated in the relatively few years since the French Revolution, one can hardly escape the conclusion that would-be social doctors have all too often tried to put together a new society and not to cure the old one. They seem not to have realized that some aspects of man's social organization, like the human species itself, have grown by the slow evolution of possibly a million years of man's living with man on this planet. Some inborn and essentially unchanging physiological and psychological characteristics of the human organism make certain social patterns more effective than others.

Social advances in recorded history there certainly have been. Democracy as we know it at its best is an example of such progress in man's estate. The abolition, in many parts of the world, of human slavery is another sure advance. It is distressing to realize, however, as we think of both democracy and the abolition of slavery, that we are living in an age in which new patterns of dictatorship and of human servitude are again being fostered by some of those who talk most loudly about creating society on a new mechanical plan.

In view of our present world conditions it is surprising to remember that many of our academic parents and grandparents convinced themselves that all, or almost all, social change of any sort was real social progress. Many of them had the simple faith that various types of social disruption, which they advocated, would lead to social uplift for the benefit of mankind everywhere. Some Victorian intellectual leaders adopted uncritically what now seems to have been a deceptively attractive general idea. They looked at the most external aspects of Darwinian biological evolutionary theory and then suggested that the same factors which were assumed to have operated during millions of years in the development of species of plants and animals could be counted on in a few decades of human planning, or telic social evolution, to establish a wholly new society. These reformers never dreamed of the difficulties of our age that followed the social upheaval they did so much to promote. In Nineteenth Century England many academic reformers cheered in a polite way as the age-old influence of the Established Church and of religion in general was being undermined. They saw only good in the passing of the remnants of the ancient stratification of society. They closed their eyes to the fact that many of those who were born to so-called special privilege traditionally recognized that they had inherited, along with the rights and status of their class, certain inescapable social obligations. The reformers who rejoiced most at the passing of the established order did not have clear enough eyes to foresee that the theory of social change they advocated would later be stretched to form a basis for a police state and the denial of the enjoyment of human personal liberties.

As Russell Kirk has recently sagaciously and persuasively pointed out, from the time of the French Revolution on, there have been those who have seen the dangers inherent in unbridled social change. John Adams, our second President, was such a philosopher. So was the often misunderstood English statesman Disraeli, and in a very different way, Matthew Arnold. There have been many others. In more recent times George Santayana, Irving Babbitt, Paul Elmer More, T. S. Eliot, and Peter Viereck have made clear some of the errors in much of the thinking of the socialists, collectivists, and disrupters generally.

Jeremy Bentham, John Stuart Mill, and other utilitarians and Fabian socialists were great hands at suggesting how Humpty-Dumpty-like human society could be broken apart. It now seems that they, like all the king's horses and all the king's men, were not equally good at suggesting means by which the organic structure of our slowly evolved society could again be regenerated after it had been shattered. Not a few modern thinkers agree, and with some reason, that our civilized world owes many of its worst disorders to the verbal blandishments of the romantic writings of Rousseau. Certainly no philosopher ever espoused a much more unrealistic psychology of human nature than did this brilliant vagabond and revolutionary thinker. After the fall of the old regime in France a whole succession of dreamers, utopians, and sentimental socialists in various countries, often explicitly influenced by Rousseau, advocated turning many of the established laws and principles of society upside down. The idea that a freely competitive economy is a high expression of man's inborn nature seems currently to be gaining ground as the practical impossibilities of the so-called classless society of socialism or communism are disclosed. That the legal sanctity of private property is a prime guarantee of our human freedoms is probably better recognized today than at any other time in the past century.

Even the late Maynard Keynes, not always the most conservative of economists, recognized the point of view here being considered. Dr. Kirk, in his recent admirable book, *The Conservative Mind*,[3] quotes Keynes as saying: "Benthamism I do now regard as the worm which has been gnawing at the insides of modern civilization and is responsible for its present moral decay. We used to regard the Christians as the enemy, because they appeared as the representatives of tradition, convention, and hocus-pocus. In truth it was the Benthamite calculus, based on over-valuation

(*Continued on page 160*)

[3]Russell Kirk, *The Conservative Mind* (Chicago: H. Regnery Company, 1953).

# Yellow Fever's Role in History

***Epidemics — and Their Conquest — Have Repeatedly Unrolled New Maps and Changed the Course of History***

By JAMES A. TOBEY

THROUGHOUT the ages the fortunes of men and the destinies of nations often have been dominated by disease. Epidemics of the past frequently devastated great armies and controlled the results of decisive military campaigns. Disastrous outbreaks of cholera, plague, smallpox, typhus, and other maladies have interfered with exploration and colonization, interrupted trade and commerce, destroyed cultures and social orders. Endemic diseases, such as malaria and yellow fever, have been responsible for the disappearance of glowing civilizations, notably those of the Mayans and the ancient Greeks. By the sudden and dramatic striking down of kings, statesmen, generals, and other leaders, disease repeatedly has changed the course of history.

Pestilence has played an interesting part in the history of our own country – a role which is now more or less forgotten and is generally overlooked by the professional historians. If, for example, it had not been for the presence of the dreaded yellow fever in the Americas a century and a half ago, the western boundary of the United States today might be the Mississippi River.

The story really begins in 1682 when a gallant gentleman of France, René Robert Cavelier, Sieur de La Salle, crossed the wilderness from Fort Frontenac in Canada to the vicinity of Lake Peoria in what is now Illinois, and sailed some 2,000 miles down an unknown river. At the mouth of this mighty stream, called by the Algonquin Indians "Missi Sipi" or Great River, La Salle took possession of all the territory drained by the river and its tributaries in the name of his sovereign, Louis XIV. In his honor, this vaguely bounded territory was named Louisiana.

After building a number of forts, La Salle returned to France, where he found favor at the court, despite the usual intrigues by his enemies. Holding the appointment as governor of Louisiana, he set sail in 1684 in four ships with 400 men to garrison the new province. En route the naval commander, one Beaujeu, refused to take any orders from La Salle and by his ineptitude managed to lose the main supply ship to hostile men-of-war of Spain. Eventually, however, they reached the West Indies, but here La Salle and most of his force promptly came down with the fever which was indigenous in this region. Undoubtedly it was the fearful vomito negro, which we now know as yellow fever.

La Salle's illness was of such long duration, and so many of his men succumbed to it – more than 200 – that the expedition was almost completely disorganized. Finally, with only 180 men La Salle went on, but sailed too far westward, missing the mouth of the Father of Waters and landing on the shores of what is now Texas. Here disaster followed disaster: two of his ships were wrecked and one returned to France, while disease and privation reduced the force to only 45 persons. In desperation La Salle attempted to reach Canada overland, but failed. In a second try, in 1687, his men mutinied and assassinated their valiant leader. A paltry few made the hazardous journey to Fort Frontenac: most were murdered by the Indians. Thus ends the first chapter.

France sent out others, Ryswick, Iberville, Crozat, Bienville, to establish colonies in Louisiana – colonies which flourished more or less despite the unfavorable climate and the constant presence of disease. In 1762 by a secret treaty the whole territory was transferred to Spain, but the new owners did not assume full possession until 1769 when a general with the good old Spanish name of Alejandro O'Reilly came to New Orleans, which had been founded in 1718 by the Sieur de Bienville. In 1763 another treaty had ceded all the area east of the Mississippi to Great Britain, and this came to the United States in 1783 after the ending of the successful American Revolutionary War. Not until 1794 was Spain persuaded to recognize the Mississippi as the new nation's western boundary and to grant the right of free navigation along its waters.

Then in 1800 Louisiana suddenly reverted to France, ruled by General Bonaparte as First Consul. At the same time Spain turned over to France the eastern part of the island of Santo Domingo, which had been held by the Spaniards since its discovery by Columbus in 1492, although the western part of the island, known as Haiti, had been a French possession since 1697. When this treaty took effect, the master of the entire country was the full-blooded descendant of an African king, Toussaint L'Ouverture, who had raised, disciplined, and trained an army of Negroes, renounced France's authority, and audaciously called himself the "Buonaparte of St. Domingo."

In 1801 Bonaparte decided to send a large military expedition to Haiti to regain control of the country, to put that other upstart Toussaint in his place, and to provide a garrison for future duty in his domain of Louisiana. Now begins the second chapter of the story; the narrative of conquest by, rather than of, a disease.

The great expedition consisted of 26 ships of the line under an admiral, Villaret de Joyeuse. This convoy, reluctantly permitted to sail by the British, car-

ried 20,000 seasoned troops commanded by General Charles Victor Emmanuel Leclerc, who happened to be the husband of Bonaparte's sister, Marie Pauline. For some strange reason, the First Consul insisted that Pauline accompany her husband on this ill-fated expedition, from which she returned a widow.

General Leclerc, an able veteran of the Army of the Rhine, met with no serious military difficulties. Toussaint promptly fled to the hills with his followers, and the French were masters of the situation within 90 days. Toussaint knew, however, that he had an insidious ally which would come to his aid with the approach of the hot weather.

That hidden enemy of the French was the yellow death. It struck suddenly, and within a few weeks had swept through the invading forces with terrible violence. In the short span of two months more than 15,000 French soldiers had perished from yellow fever. Among the victims were 20 generals, including the commander himself. In vain did the First Consul double the size of his army in Haiti, but the relentless pest continued to take its toll. Whole divisions, as one medical historian puts it, "melted like wax in the sun."

Toussaint, biding his time in the hills, was treacherously lured to the capital by the French, was arrested and sent to France, where he died in jail in April of 1803. He was succeeded by the savage Jean Jacques Dessalines who defeated Leclerc's successor, General Richambeau, and his sick and depleted army in November of that same year.

The French troops, it must be remembered, had been intended for duty in Louisiana after the simple task of subjugating Santo Domingo had been accomplished, but unfortunately for France, no healthy troops remained to undertake this mission, particularly important in view of a threatened expedition by the British against New Orleans. Thwarted by yellow fever and faced with failure in his ambitious colonial ventures, the future emperor of France suddenly called in the American minister in Paris, Robert Livingston, and offered to sell to the United States the entire territory of Louisiana. Napoleon Bonaparte blandly made this astonishing offer despite his most solemn pledge to Spain never to alienate the territory. Pledges then, as now, meant little to despots bent on conquering the world.

Mr. Livingston was taken by surprise. Acting on instructions from Secretary of State Madison, he had been angling with Bonaparte's minister, Talleyrand, for a small section of Louisiana, including the city of New Orleans and West Florida. In the new negotiations he was joined by James Monroe, whom President Jefferson had sent to Paris as envoy extraordinary, and together they decided to exceed their instructions, throw caution to the winds, and acquire Louisiana for their country. For this area of more than a million square miles they paid 60,000,000 francs and assumed debts and claims for another 20,000,000. This amounted to $15,000,000 or about $0.04 an acre for one of the world's richest agricultural sections. Out of this territory were carved 13 of our Midwestern states.

Thus, on April 30, 1803, did yellow fever unroll a new map – one which practically doubled the size of the new nation in North America.

During the period when these dramatic events were taking place, yellow fever made frequent visitations to the United States itself. It came usually by ship from the West Indies where this terrible affliction had been endemic for a century or more. Tradition has it, in fact, that Christopher Columbus suffered from yellow fever on his second voyage to America at the end of 1493, but authorities believe that the *modorra* of Columbus at this time was something else and that yellow fever was unknown in the Western Hemisphere until it was imported from Africa by the slaves brought to the West Indies by the Spaniards early in the Sixteenth Century. The disease was not accurately described in the Americas until 1635, and the first recorded epidemic of it began in the Barbados in 1647 and quickly spread throughout the West Indies and into Mexico and the Yucatan.

At any rate, yellow fever came to New York in 1668 and to Boston in 1691. Two years later it was noted in Philadelphia and Charleston, and in subsequent years it went as far north as Portsmouth, N. H., Montreal, and Quebec. Between 1699 and 1893 no less than 148 epidemics of yellow fever were recorded in what is now the United States. The last one of any consequence occurred in New Orleans in 1905, and since that time yellow fever has been banished from our country.

The worst of the early epidemics of yellow fever broke out in Philadelphia in 1793, causing some 4,000 deaths out of a population of about 60,000. It also caused panic in what was then the nation's capital. George Washington was in the city at the time, but remained in the suburbs and escaped the disease. Alexander Hamilton contracted it, but recovered, although a less fortunate victim was the first husband of the future Mrs. James Madison. Dr. Benjamin Rush, the leading physician of the time and a signer of the Declaration of Independence, was stricken but recovered and continued to minister to his patients. Dr. Rush and his colleagues came to the conclusion that the epidemic was due to miasmatic conditions, particularly a lot of spoiled and rotting coffee on one of the docks. In a later outbreak, in 1797, he did, however, make the interesting observation that there seemed to be an unusual prevalence of mosquitoes.

The most severe of all of the epidemics of yellow fever in the United States occurred in 1878, following less extensive outbreaks in 1873 and 1876. The entire Mississippi Valley and all of the Atlantic Coast states were affected, but the brunt was borne by the cities of New Orleans, Vicksburg, and Memphis. It is estimated that fully 100,000 persons were afflicted, and that there were 20,000 deaths. The situation was so serious that President Hayes sent a message to Congress about it, and Congress created a National Board of Health to cope with the emergency. By 1882, when the excitement had died down, our first and only National Board of Health went into a state of desuetude, although it did not cease to exist, officially, until 1893.

During our war with Spain in 1898 yellow fever played havoc with the susceptible American troops, particularly in Cuba. In this brief war about 5,000 soldiers succumbed to disease – yellow fever, typhoid

(*Continued on page 168*)

# Decorative Tiles

## THEIR PLACE IN CERAMIC ART—PART I

***For More Than 6,000 Years, Decorative Tiles Have Yielded a Clue to Man's Technology and Culture***

By E. STANLEY WIRES

MUCH has been written about pottery and porcelain, but very little has been written about the important part that decorative tilework has played in the development of the ceramic arts. Historically, pottery and tiles have probably been the most important means of tracing the culture of mankind, and ceramic collections are libraries of history.

The proper study of this subject should be through the massed effect of many tiles, but the collector must base much of his research upon the design and color of the individual tile. It is also necessary to visualize a span of at least 6,000 years, and to follow the fast-moving history of those countries bordering the Mediterranean Sea, through northern Africa to Spain, through Central Europe to England, and eventually to America. The westward course of development of decorative tiles is shown in the accompanying map, Fig. 1.

### *Tiles of Ancient Egypt, Babylonia, Assyria, and Persia*

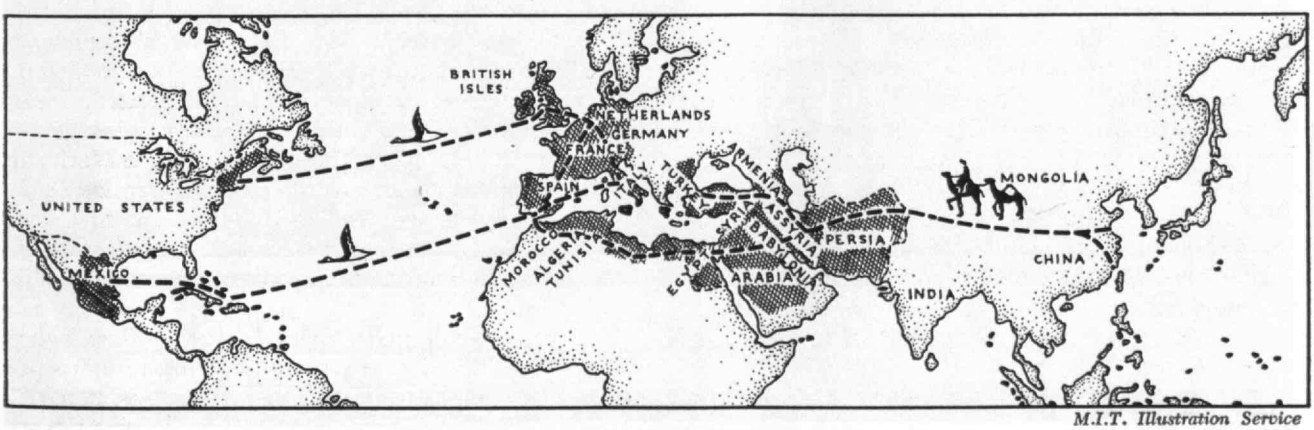
Decorative and glazed tiles, as we know them, originated in Egypt about 4700 B.C., but due to a plentiful supply of building material the ancient Egyptians never developed the architectural use of tiles to any great extent. In the tomb chamber of what may have been the first stone building in the world, the Pyramid of Sakkara, the walls were lined with two-inch by one-inch blue glazed tiles, and the door jambs with painted tiles. On the back of each tile a perforated tenon was provided, through which copper wires were passed to secure the tiles to the wall.

The use of ceramic decoration and enameling in Babylonia and Assyria was derived from Egypt. These countries were part of the Tigris-Euphrates Basin, the whole district being known as Mesopotamia, where the architectural material was largely the humble clay of the river bed. Babylonia dominated the valley until about 1100 B.C. when the Assyrians came into power and ruled the country from their capital at Nineveh. Under the rule of King Nebuchadnezzar, whose reign lasted 43 years, Babylonia again regained its power, to be relinquished in 538 B.C. to Cyrus, King of Persia.

Ceramic decoration in these countries took the form of both glazed and unglazed brick walls, with pictorial designs in low relief, as shown in Figs. 2 and 3. The splendor of design and color – rich blue, red, yellow, and black – is comparable with the later tile-mosaic of the Saracens.

Two of the best examples of this work were in the Palace of Sargon, King of Assyria, at Khorsabad, and upon the walls of the sacred street of Marduk (Shrine of God) leading to the Ishtar Gate of ancient Babylon. In the great Palace of Sargon, which was said to cover 25 acres, the colored murals lined the arches at the entrances of the approach ramps, up which the king's chariots were driven. On the walls bordering the sacred street of the God, Marduk, the enameled decoration was a procession of animals – lions, unicorns, bulls, and curious dragons – all sacred to the cult of Ishtar.

The very important part that Persia took in the development of ancient ceramic art centers around the Achaemenian period 558-333 B.C. In this period, from the time of King Cyrus, Susa was the residence of the Persian kings, but under King Darius I, a great




M.I.T. Illustration Service

*Fig. 1. Tilemaking covers a period of at least 6,000 years and follows the development of history of the countries bordering the Mediterranean Sea, through northern Africa to Spain, through Central Europe to England, and eventually to America.*

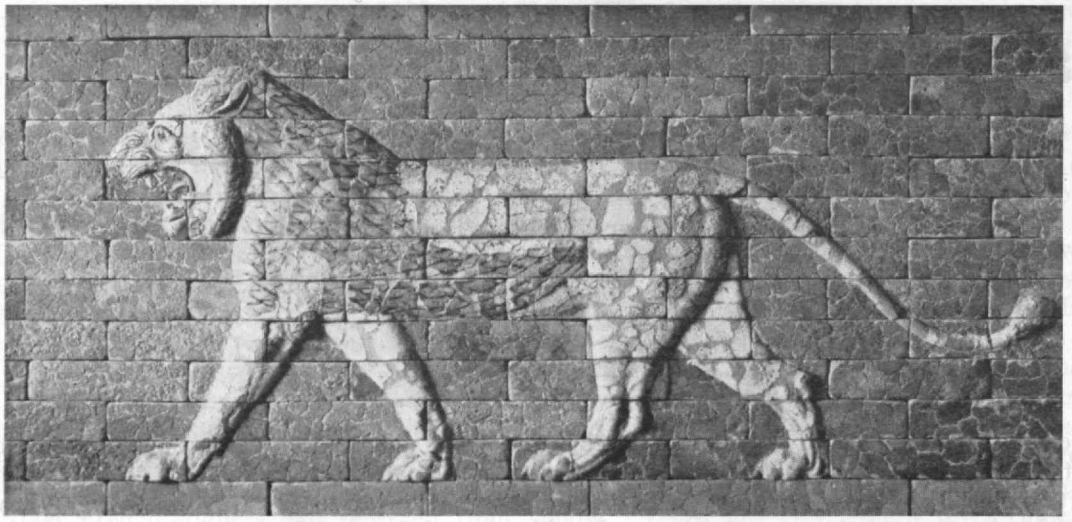


*Fig. 2. Among the decorations on the walls bordering the Processional Way in Babylonia, Sixth Century, B.C., appears this glazed lion. Major colors used in tiles of this era were rich blue, red, yellow, and black.*

*Boston Museum of Fine Arts*

palace was constructed and typical examples of enameled brickwork were the "Lion's Frieze" (Fig. 2) and "Archers' Frieze" (Fig. 3). Although both of these examples are similar to the work of Babylon, the detail and color composition of the "Archers' Frieze" — with its brown of the skin, and robes of yellow or white relieved by colored rosettes — has similarity to the later work of Saracenic Persia.

With the fall of the Achaemenian line of Persia, when Alexander the Great crossed the Hellespont and gained control in 335 B.C., the technique died out and neither the Greeks nor the Romans made any extensive use of tiles. It was also true that India's role in the ancient history of ceramics was not important. The Indian people, somewhat like the Chinese, had little intercourse with other people at that time. It was in the later Moslem rule that the decorative tilework of India was brought to a climax through Mogul architecture, the most important example being the Taj Mahal at Agra.

*The Louvre, Paris*

*Fig. 3. The "Archers' Frieze" from Susa, residence of Persian kings, is of enameled brick, similar to tile work of Babylon.*

### *Tiles of Saracenic Persia, Syria, and Turkey*

The Moslems, followers of their God (Allah) and the prophet Mohammed (570-632 A.D.) had their rise in Arabia and soon conquered their neighbors. Upon the death of Mohammed, his friend Caliph Abu Bekr became the leader and deliberately started to conquer the world for Allah. Rexford Newcomb's* "Architectural Monographs on Tilework" gives the following partial events outlining Saracenic history:

638 A.D. – Syria and Asia Minor conquered
640 A.D. – Egypt and Mesopotamia taken
643 A.D. – Spread into North Africa
644 A.D. – Persia proper conquered
661–750 A.D. – Omayyad Dynasty, Capital Damascus
711 A.D. – Saracens enter Spain
732 A.D. – Spread into France and defeat by the Christian army of Charles Martel at the Battle of Tours

The Arabs, having the oriental love for display and color and being decorators rather than great architects, quite naturally adopted and developed the ceramic arts of the conquered people. Whether these tilemakers had any knowledge of the work of their Achaemenian forefathers may be questioned, but it is clear that they had years of experience and laid the foundation for a great ceramic revival. The great devastation, such as that afflicted by the Mongols under the leadership of Genghis Khan, did not destroy the potter's art. The lives of the craftsmen were usually spared and often ceramic artisans lived with the strong and prosperous rulers.

Probably Persia played the most important part in the development of decorative tiles, and the finished tilework of this country – of which Fig. 4 is a good example – exhibited a degree of skill and feeling for the material that has rarely been equaled.

For progress during the period from 622 to 1200 A.D., the historians of today can piece together only bits of information obtained from a limited number of excavations. The cities of Rakka, Rhages, and above all, Sāmarrā, have each contributed their share of fragmentary proof.

The earliest tiles were found at Sāmarrā in the Ninth Century. They were large 10½-inch squares surrounded by oblong hexagonal units, painted in red, green, yellow, and golden-brown luster. Between the Twelfth and Fifteenth Centuries, Persian tilework reached its perfection and as a result the mosques, public buildings, and even the houses of such magnificent cities as Rhages, Tabriz, Ispahan, and Veramin were resplendent with brilliantly glazed wall tiles (Fig. 6), lustered in golden brown changing to an iridescent film of green, purple, or ruby red in the changing light. This luster technique, unique with Persia, was to influence later European tilework, especially that of Spain, as a sequel to the Moorish invasion.

As the Moslem religion prohibited the use of animal and human forms in religious design, we find a marvelous use of lustered Koranic inscriptions raised in low relief, with background of stylized foliage, as in Fig. 5.

Another characteristic shape was the eight-pointed star combined in pattern with the cruciform, as shown in Fig. 8. These tiles were produced from inferior white clay, surfaced with a slip (liquid clay), decorated in delicate patterns, with a final overglaze resulting in a rich color effect. The predominating colors were cobalt blue, turquoise, and copper green combined with the iridescent chocolate-brown luster. The decorative motifs covered a wide variety of subjects – the conventional pink, rose, hyacinth, and arabesques, the hare, the deer, and several kinds of birds.

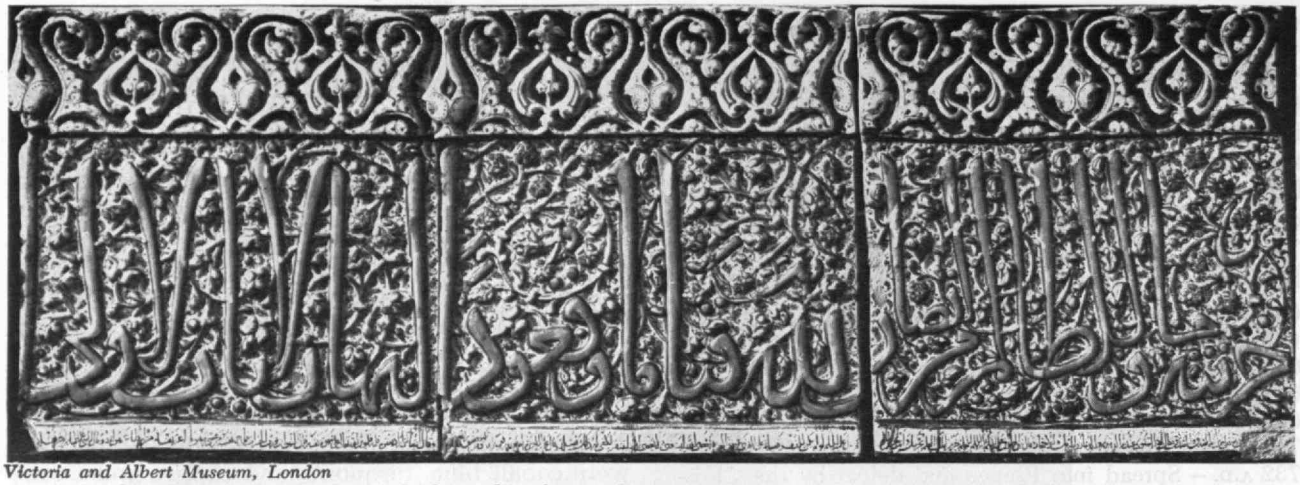
Totally different from the painted tiles is the technique of tile-mosaic, shown in Fig. 7. The separate pieces were cut from large, glazed tiles already fired. They were then fitted to a pattern face downward, covered with reinforcing canes over which the mortar was poured. When dry, the panel was placed in its proper position on the wall. Famous examples of this tile-mosaic work are the Blue Mosque at Tabriz, completed in 1465 A.D. and the Tomb of Tamerlane at Samarkand.

To overcome the labor of cutting the pieces, a method made necessary to prevent colored glazes from running together, the Persians developed a dry

*Victoria and Albert Museum, London*

*Fig. 4. Persian wall tile of the Seventh Century exhibits an unusual degree of skill in decorative tiles.*

* New York: Associated Tile Manufacturers, 1924.



Victoria and Albert Museum, London

*Fig. 5. As demonstrated by this lustered tile of the Thirteenth Century, inscriptions raised in low relief and with background of stylized foliage were common in Koranic tile. This form of art evolved from the prohibition, by the Moslem religion, of animal and human forms in religious design.*

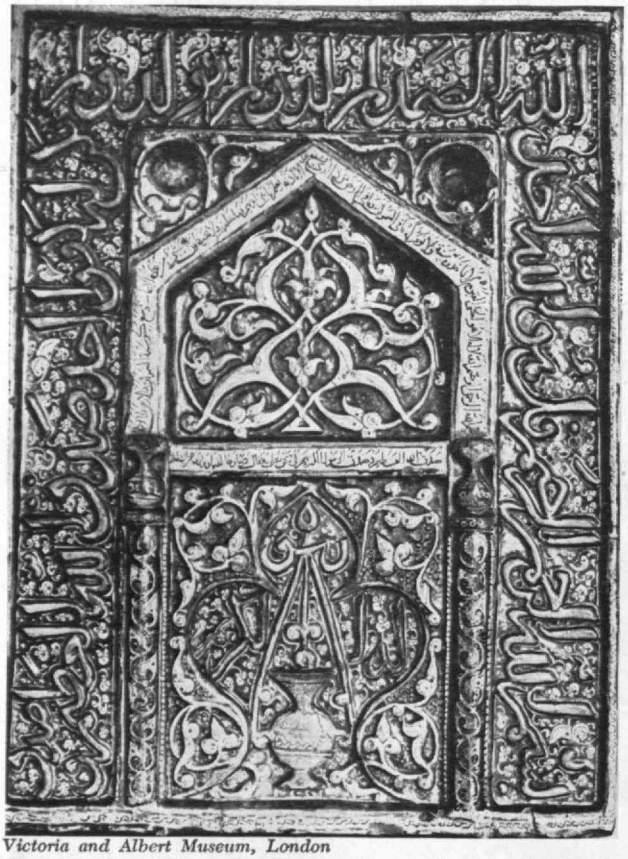


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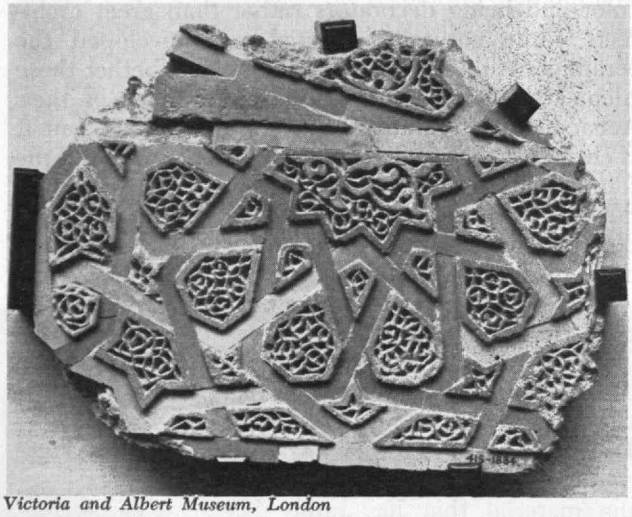
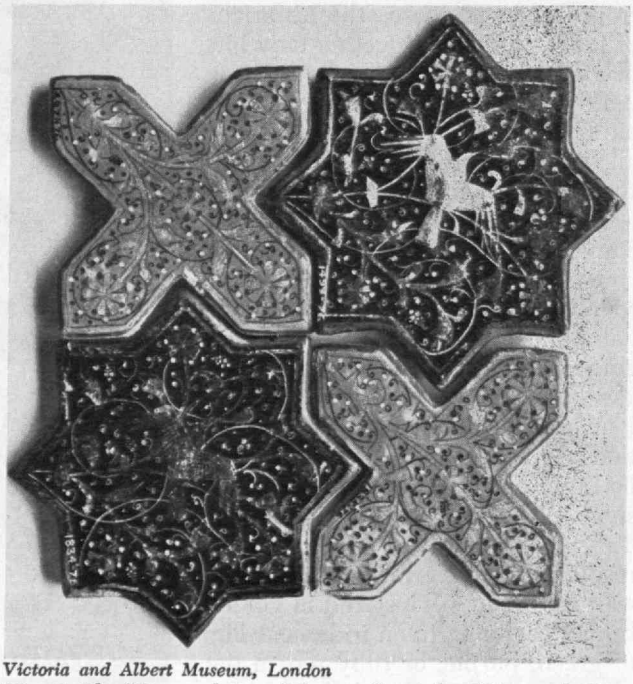
*Fig. 6. The Thirteenth Century Persian lustered wall tile, above, typifies the brilliant glazed tiles which were unique with Persia and lustered in golden brown, changing to an iridescent film of green, purple, or ruby red in changing light.*



Victoria and Albert Museum, London

*Fig. 7. Totally different from the painted tiles were the tile-mosaics, such as this Fourteenth Century Persian wall mosaic.*



Victoria and Albert Museum, London

*Fig. 8. The "Star and Cross" luster tile of the Thirteenth Century is characteristic of the combination of the eight-pointed star and the cruciform used by the Persians.*

cord technique, later known in Spain as "cuerda seca," where either dry channels or purple pigment lines were placed between the different glazes on a single tile. Polychrome glazed faience panels of this type of tile were used on the walls of the royal palace in the famous capital of Isfahan during the reign of Shah Abbas I, 1585-1627. These panels of human figures depicted the rich and languid life of the period, well illustrated by the tile mural owned by the Metropolitan Museum of Art (Fig. 9), which shows the ladies of the court receiving bribes or presents from European merchants desirous of the Shah's favor.

Metropolitan Museum of Art, New York

*Fig. 9. Depicting the rich and languid life of the period, this Persian tile wall panel, Period Shah Abbas I, Seventeenth Century, shows the ladies of the court receiving presents from European merchants desirous of the Shah's favor.*

In the later work of the Sixteenth and Seventeenth Centuries, varieties of the painted panels were single tiles, with patterns in relief, showing figures of men hawking on horseback. Other tiles show busts of men and women painted on flat tiles, as in Fig. 10.

Little is known about the ceramic art of ancient Syria, for the Hebrews of Syria were a nomadic people, slow to adopt the art that surrounded their country.

In the later Saracenic period, Persian tilemakers found their way into Arabia, Egypt, Syria, and northern Africa where local schools of pottery were established. The Syrian tiles can be distinguished from those of Persia and Turkey by the rather coarse painted designs of arabesques, looped palmettes, and radiating motives based on the star, and the absence of red color. Turkey's part in the Moslem conquests started with the Ottomans and Seljuks who joined in the early crusades. Konia and Adrianople, in Asia Minor, became important ceramic centers until the capture of Constantinople in 1453 A.D.

At the height of its power in the Fifteenth and Sixteenth Centuries Turkey developed a national ceramic art and achieved great distinction for its decorative tiles. The victorious sultans, who fought against the Persians, brought back the craftsmen and we are told that Selim I, when he captured Tabriz and Kashan, moved 700 families of the best tilemakers to Isnik.

The tiles that lined both exterior and interior walls of the great mosques were unsurpassed for boldness of design and brilliance of color, and they endowed the inner walls, domes and mihrabs with special magnificence. The distinguishing color was a thick red obtained from a clay called Armenian bole and applied in the form of a slip.

The tiles were of simple geometrical shapes, cut faience mosaic and unexcelled mural panels (Fig. 11), painted with underglaze pigments on large areas of rectangular tiles. The best tiles were made from the clay of Nicaea (Isnik) coated with a transparent white glaze and a naturalistic rendering of flowers, all comparable to Chinese porcelain. The tile industry started to decline early in the Seventeenth Century and partially regained importance in the Eighteenth Century when Kutahia, largely populated by Armenians, became the center of tile manufacture.

Boston Museum of Fine Arts

*Fig. 10. Persian painted portrait tile — Kowbacha, Daghestan, Sixteenth Century.*


*Victoria and Albert Museum, London*

*Fig. 11 At the height of its power in the Fifteenth and Sixteenth Centuries, Turkey achieved great distinction for its decorative tiles. Turkish tiles, such as this mural panel, were unsurpassed for boldness of design and brilliance of color, and were distinguished by a thick red color called Armenian bole.*

### *Northern Africa and Spain*

A brief historical background of the Moslems in North Africa and Spain starts in 711 A.D. when the army of the Omayyad, Caliph of Damascus, defeated the Teutonic Goths and occupied both Africa and Spain. Gaining a foothold in Europe, the Mohammedans surged through southern France to be repulsed by the Teutonic Franks, in the savage battle of Tours, 732 A.D., settling the fate of Christianity. However, it was not until 1492 that the last Moslem king of Granada surrendered to Ferdinand and Isabella, and Spain became a Christian country once again.

Tiles of Tunisia, Algeria, and Morocco were not only influenced by earlier work but were imported from Europe. Tiled minarets, unlike the circular forms of Persia and Turkey, were square in plan, rising to a crenelated parapet, with box-like cupola above. In Morocco some of the tiles were designed and glazed with tin enamel, in the manner of the Delft School, by Dutch slaves captured in the Seventeenth Century.

Strange as it seems, tiles were not extensively used in Spain until the Christians re-established their power. Many Moslems, called Mudejares, remained in Spain and their tilework naturally followed the Moorish style. In both public and private architecture, tiles were extensively used for decorating walls, steps, seats, and garden fountains; to have a house in Spain without tilework was a proverbial expression of poverty. Fine examples of this Fourteenth-Century work can be seen in the Alhambra and the churches and monasteries of Seville. The fact that the Moors of Granada held out for over two centuries after they had lost all of the other Spanish dominion, gave the kings of Granada the chance to build the famous Alhambra palace, which represents the highest achievement of Moorish art in Spain. Here glazed tile and colored plaster take the place of marble and mosaic.

Spanish tilework combined cut-mosaic, usually in geometric designs, with the method previously used in the Near East called cuerda seca (dry cord). Still another method appeared early in the Sixteenth Century, the cuenca (hollow) technique, where the design was pressed into the unfired face of the tile, leaving a raised outline that separated the colors. This and the cuerda seca technique allowed the reproduction of finer detail, such as the arms of the Pope, heraldry, candelabra, stylized leaves, flowers, and Renaissance designs.

Immigrant potters, among them being Francisco Niculoso of Pisa in Italy, came to Seville. Finding a popular enthusiasm for architectural decoration, they painted magnificent floral designs over panels of square tiles – a method influencing the later tilework of Holland.

In completing our survey of Spanish tiles, it is interesting to note, that previous to the Eighteenth Century, skilled potters from Talavera, Spain, had established a pottery at Puebla, Mexico. However, the Spanish influence was gradually tempered by the native Indian Aztec art.

### *Medieval Inlaid and Relief Tiles of Europe*

In striking contrast to the brilliant wall tiles, so extensively used in the long period of Saracenic con-


Victoria and Albert Museum, London

quest, are the inlaid and relief tiles of Europe. They were used under the Norman rule, from about 1200 A.D. to 1500 A.D., when the church held great power and every effort was made to excel the splendor of the Italian ecclesiastical architecture. In the middle of the Eleventh Century mosaic workers had been brought to Italy from Constantinople and a type of pavement called *opus Alexandrinum,* combining large discs of colored marble, was developed. From these pavements, the first earthenware tile pavements of northern Europe were derived, especially in those countries where native stone and marble were not abundant. The relief tiles, favored by Germany and Switzerland, were decorated in raised relief, the designs often influenced by tapestry motives of Persia. Other tiles common to the German cities along the Rhine were five-inch unglazed gray and red floor tile, with incised designs of monsters associated with heraldry stamped on the soft clay. Pavements of tile-mosaic consisted of red and brown tiles, usually geometric in shape, coated with a yellowish lead glaze.

Inlaid tiles were also derived from a type of stone pavement, made by the French in the Twelfth and Thirteenth Centuries, where the design was drawn on the stone surface, cut out and filled with a darker colored substance. The tilemakers borrowed this idea, as shown in Fig. 12, and by means of a wooden die or sharp tool the design was struck into the moist clay. The impression was then filled with white or red clay, contrasting with the body color, and finally the tiles were glazed with transparent lead.

The technique of inlaid tilework was practiced with great success in England and the designs stand apart

(*Continued on page 166*)

*Fig. 12. (top of page) Fifteenth Century French inlaid tiles were derived from a type of stone pavement made in the Twelfth and Thirteenth Centuries.*

*Fig. 13. (bottom of page) Renaissance painted tile was known as faience or majolica ware. Depicted (left to right): a diamond surrounded by blazing fagots, with the word* Amumoc (Blameless); *a leashed hound; a gauntlet with motto, "Good Faith Is Unchangeable."*

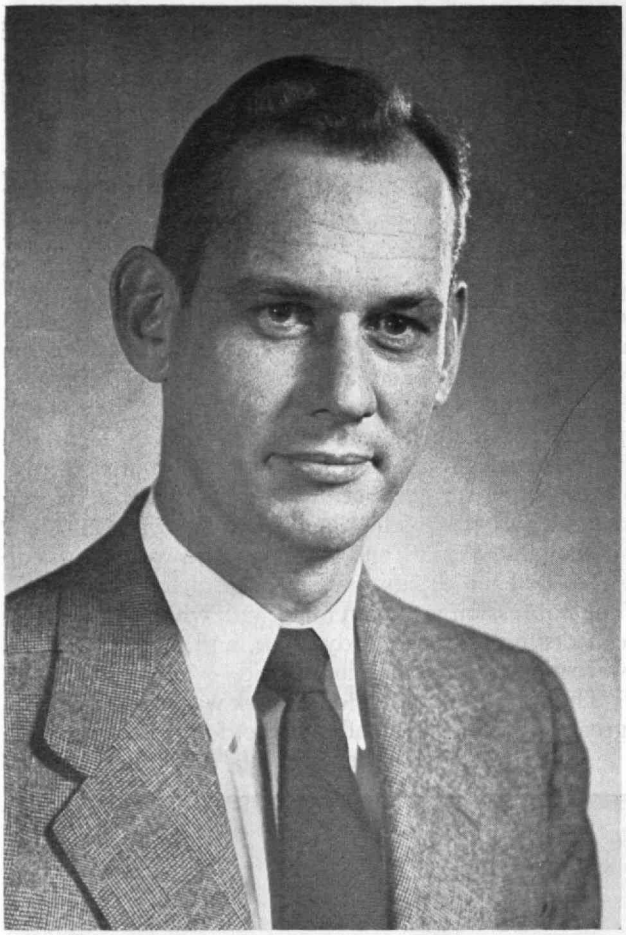
*Fig. 14. (right) English inlaid tiles, such as these examples from Keynsham Abbey, depict mythological figures, heraldic emblems, and animals.*

Victoria and Albert Museum, London

Victoria and Albert Museum, London

# THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE



*M.I.T. Photo*

**Philip A. Stoddard, '40**
*Associate Placement Officer at M.I.T.*

## *Associate Placement Officer*

THE appointment of Philip A. Stoddard, '40, as Associate Placement Officer at the Institute was announced in November by Julius A. Stratton, '23, Vice-president and Provost of M.I.T. Mr. Stoddard has been assistant to Robert M. Kimball, '33, Director of the Division of Business Administration, since 1951. He will be succeeded in that position by John W. Sheetz, 3d, '42, who has transferred from the Lincoln Laboratory. In making the announcement, Dr. Stratton said:

Mr. Stoddard's appointment is an indication of the increased importance the Institute attaches to placement guidance and a closer relationship with the various representatives of industry and government who come to the Institute to select students for various positions.

We believe that the demand for our graduates will continue to be high, and that we have a real opportunity and obligation to place our graduates in positions where they can be most effective and where they will be most happy to stay. This can be done first, by more guidance to the students in selecting positions, and second, by close co-operation with industry and government in selection of personnel.

Mr. Stoddard, who is 36 years old, is the son of Florence (Menzies) Stoddard and the late Ralph C. Stoddard. He was graduated from Hingham High School in 1935 and from Phillips Exeter Academy the following year. He then entered M.I.T. which granted him the degree of bachelor of science in Business Engineering and Administration in 1940. After serving on the engineering staff of the Ingersoll-Rand Company of Phillipsburg, N.J., Mr. Stoddard served from 1940 until October, 1945, in the U.S. Army Ordnance Corps, 3rd Armored Division. He attained the rank of captain and served in the European Theater. After his war service, he returned to the Ingersoll-Rand Company for nearly a year before joining the staff of the Institute.

## *Of Technology Parentage*

OUT of the Institute's 833 Freshmen this fall came 29 students whose fathers (and in one case, mother) are Alumni of M.I.T. A campus far different from that of the 'twenties and 'thirties greets those of Technology parentage listed below – but a campus that continues to hold the intangibles which produce the basis for a sound engineering and scientific training.

| *Student* | *Parent* |
|---|---|
| Chester C. Bannister | Alfred E. Bannister, '15 (deceased) |
| Jay R. Bonnar | J. Robert Bonnar, '27 |
| Robert G. Bridgham | Minot R. S. Bridgham, '32 |
| Edgar H. Bristol | Benjamin H. Bristol, 2d, '19 |
| Peter C. Card | Thomas B. Card, '21 |
| Armand E. Cherniack | Nathan Cherniack, '22 |
| Ralph deJ. Dopmeyer | Arthur L. Dopmeyer, '20 |
| Paul R. Duevel | Charles O. Duevel, Jr., '24 |
| A. Wentworth Erickson, 3d | A. Wentworth Erickson Jr., '28 |
| Lee B. Freese | Simon W. Freese, '21 |
| Donato A. Grieco, Jr. | Donato A. Grieco, '31 |
| Robert P. Holton | John H. Holton, '17 |
| Norman P. Howard | Alan F. Howard, '18 |
| Richard P. Hurlbut | Terry A. Hurlbut, '28 |
| Malcolm M. Jones | S. Murray Jones, '21 |
| Albert S. Klainer | Ruben H. Klainer, '24 |
| Charles deG. Koch | Fred C. Koch, '22 |
| John E. Marsland, Jr. | John E. Marsland, '32 |
| Philip B. Mitchell | Ronald A. Mitchell, '25 |
| George Moy, Jr. | George Moy, '31 |
| Russell M. Peirce, Jr. | Russell M. Peirce, '20 |
| Alan Phillips | Charlotte T. (Mrs. Henry B.) Phillips, '26 |
| Thomas S. Roberts | Claudius H. M. Roberts, '17 |
| William C. Salmon | Chenery Salmon, '26 |
| Lewis R. Smith | R. Barlow Smith, '33 |
| Thomas L. Springall | Cyrus F. Springall, '12 |
| Henry K. Uman | Abraham S. Uman, '30 |
| K. William Waterson, Jr. | Karl W. Waterson, '98 |
| Richard V. Westerhoff | Russell P. Westerhoff, '27 |

## *Chemical Engineering Procedures*

TWENTY members of the faculty in the Department of Chemical Engineering met with Karl T. Compton, Chairman of the M.I.T. Corporation, James R. Killian, Jr., '26, President of M.I.T., and Edward L. Cochrane, '20, Dean of the School of Engineering, together with five members of the Visiting Committee on the Department of Chemical Engineering at Cambridge on March 20, 1953.* A broad range of topics was covered in this full day meeting. The extensive report of this Committee, released for publication in The Review on July 29, must necessarily be considerably condensed here. It is believed that the sense of the Committee's views are retained in the following editorial condensation, however.

The meeting was opened by a discussion of the educational philosophy of the Department. Charles A. Thomas, '24, pointed out the need for the Institute to question, from time to time, whether it is turning out better chemical engineers than in the past. The development of judgment and a sense of responsibility constitute an important part of college training, and these traits can be developed most effectively by close personal contact between students and experienced Faculty members. It was agreed that the best interests of the nation require that educational institutions give first priority to the training of their students. It is recognized that Faculty members may have important obligations to serve the nation as technical experts or as government administrators, but such activities are to be regarded as short-term gains as compared to the long-term gains attained through undergraduate and graduate training in science and engineering.

The faculty is engaged in internal and external committee and advisory work to a much greater degree than 15 years ago. Each such activity can be justified, but in the aggregate such duties require a great deal of time; they tend to limit opportunity for professional advancement on the part of the faculty, and curtail time for student-faculty contacts. Hence, the need arises for maintaining a proper balance of the working load on the faculty.

J. Edward Vivian, '39, Associate Professor of Chemical Engineering, reported on activities of the Department's two practice schools: the chemical engineering practice school with stations in Lackawanna, N.Y., South Brewer, Maine, and Parlin, N.J.; and the atomic energy practice school, established in 1948, at Oak Ridge, Tenn. The first of these constitutes a part of the graduate program of the Department. The Oak Ridge practice school is intended for graduate students in all branches of engineering, but attendance has been mainly by chemical, and a few mechanical, engineers. Both practice schools give students an opportunity to become well acquainted with industrial problems, and all stations are in good physical condition. Both practice schools have facilities for more students than have been registered of late. The purpose of the Oak Ridge practice school can be fulfilled more effectively by increasing the number of students, from other courses, who take advantage of available facilities.

A discussion of undergraduate education brought forth expressions from the faculty that it was impossible to cover all topics industry would like to have taught, even if the Chemical Engineering program were extended to five years. It was the general feeling that the best course to follow in teaching chemical engineering was to limit the course to four years and to emphasize fundamentals. Those students who feel the need for, and who have the capacity to benefit from, additional training could continue at the graduate level. Such a procedure could overcome objections of over-departmentalization and could well have, as its major objective, the building of a flexible mind in students.

Present enrollment in Chemical Engineering at the Institute is at about the prewar level but is increasing. It is anticipated that in a few years there will be a 50 per cent increase above prewar figures in the number of graduates in Chemical Engineering. Graduate School enrollment has dropped in the last few years.

Operation of the new course in nuclear engineering was discussed in considerable detail. Much interest has been shown in nuclear engineering by graduate students. Those mainly interested are a group of naval students from the Bureau of Ships, physicists, and chemical and mechanical engineers. A more integrated curriculum than now exists is desirable for this undergraduate course, however.

A proposed course of graduate study leading to the master of science degree in nuclear engineering has been prepared, and the Committee agreed with the desirability of offering a master's degree in nuclear engineering. Nevertheless, it was recognized that there is, as yet, little demand for graduates with such a degree. Before industry takes an interest in applications of atomic energy, the law concerning fissionable materials and operating difficulties for processing such materials would have to be changed.

In dealing with the topic of future employment prospects for graduates of Course X, the members of the Visiting Committee were in agreement that the demand for chemical engineers would probably continue at a high level for the next several years, especially for those with good sound training in the field.

* Members of this Committee for 1952-1953 were: Charles A. Thomas, '24, chairman, Bradley Dewey, '09, Edward S. Farrow, '20, William M. Stratford, '21, David A. Shepard, '26, Robert B. Semple, '32, and Ralph G. Follis.

## *Plant Physiology*

CURRENT experiments dealing with the way in which plants live, grow, and develop were discussed by Kenneth V. Thimann, Professor of Plant Physiology at Harvard University in a lecture — "The Physiology of Growth in Plant Tissues." M.I.T.'s chapter of the Society of the Sigma Xi, the national honorary society for the encouragement of scientific research, sponsored the lecture at the Institute on December 1.

A native of England, Dr. Thimann holds degrees from the Imperial College of Science and Technology, London, and the University of London. He came to the United States in 1930 to become instructor in biochemistry at the California Institute of Technology and has been at Harvard University since 1935. From 1946 to 1950 he served as director of the Harvard Biological Laboratories.

## *Ancient Shipwrecks*

WITH 175 members and guests attending, the 299th meeting of the Alumni Council at the M.I.T. Faculty Club on Monday, November 30, 1953, was the largest on record, and was devoted to discussion of scholarship aid, research obligations to the industrial community, and photographs of submarine life and sunken treasures. Horatio L. Bond, '23, as President of the Alumni Association, opened the dinner meeting with a routine of business in which the minutes of the October 26 meeting were approved, Donald P. Severance, '38, as Secretary of the Association, reported that two changes of class affiliation had been approved and that, between October 28 and November 20, nineteen members of the M.I.T. staff had visited 27 M.I.T. clubs.

Stanley C. Dunning, '17, chairman of the Midwinter Meeting Committee, reported that this year's Midwinter Meeting would be held at Walker Memorial on Thursday, February 4. Following a steak dinner, James R. Killian, Jr., '26, President of the Institute, will address Alumni on Technology affairs, and Horace S. Ford, M.I.T. Treasurer Emeritus, will act as master of ceremonies in a program in which one speaker from each of the Institute's three neighbors along "Research Row" will speak: one from Godfrey L. Cabot, Inc., one from Arthur D. Little, Inc., and one from the National Research Corporation.

Henry B. Kane, '24, Director of the Alumni Fund, reported that, as of November 30, a total of $80,000 had been contributed by 4,141 Alumni.

President Bond then introduced Karl T. Compton, Chairman of the M.I.T. Corporation, who spoke on financing a college education. Sometimes well-qualified applicants who are admitted to the Institute fail to register. A survey of such cases often discloses that failure to enter college may be traced to lack of scholarships; in other cases, a student may enter some other educational institution if scholarship aid from that university is more attractive than that which M.I.T. is able to provide the student. Last year the Sloan Foundation established a number of scholarships, ranging in value from $200 to $2,000 for students entering M.I.T., California Institute of Technology, Carnegie Institute of Technology, and the Engineering School of Cornell University.

Next, William R. Weems, '35, was asked to describe the operation of the Industrial Liaison Office, of which he is director. Mr. Weems defined the purpose and scope of the activities of his office as follows: "The Industrial Liaison Program is a device for providing convenience of access to M.I.T.'s research program, and every other reasonable consideration within the existing ethical and traditional framework of the Institute, to a certain group of companies which are affording M.I.T. financial support of an essentially unrestricted character." Toward this end, the Industrial Liaison Office is engaged in distributing certain technical publications, in administering special conferences and symposia, and arranging for special visits for the firms participating in the Industrial Liaison Program. The activities of the Industrial Liaison Program differ from those of the Division of Industrial Coöperation (which handles contract research) and also from programs of grants-in-aid (in which a specific field of research is sponsored) through unrestricted financial support for the academic budget.

Professor Harold E. Edgerton, '27, of the Department of Electrical Engineering, next showed his excellent colored movies and slides taken during the past summer while aboard the ship *Calypso* with Jacques Costeau, whose underwater exploring is described in his recent best-selling book, *Silent World.** Professor Edgerton was primarily concerned with experimenting with his newly developed electronic-flash equipment for deep-sea photography and with the photographic investigation of the deep scattering layer – for which he had a grant from the National Geographic Society and equipment built at M.I.T.'s Research Laboratory for Electronics. However, he devoted most of his talk to the day-by-day shipboard action of raising cargo from an ancient Greek galley sunk in 230 B.C. off the coast of Marseille, France; searching for other ancient shipwrecks; and pictures and explanations of such discoveries as dishes and Roman and Greek amphorae (one even containing its original wine of 2,200 years ago).

## *Qualifications for Chemists*

MORNING and afternoon sessions of the Visiting Committee on the Department of Chemistry† were held in the Moore Room at M.I.T. when the Committee met on March 1, 1953. Karl T. Compton, chairman of the Corporation, and James R. Killian, Jr., '26, President of the Institute, joined the group for part of the meeting. Arthur C. Cope, Head of the Department, and Leicester F. Hamilton, '14, Executive Officer, discussed various problems with the Committee; faculty members reported on current research programs and discussed undergraduate and graduate curricula in physical chemistry.

One of the questions raised was the possible reduction of laboratory work in physical chemistry for students in Chemical Engineering. It was the opinion of the Committee that the laboratory work in physical chemistry for chemical engineers should not be reduced below the present level of four hours every other week, even if the alternative were to cut organic chemistry laboratory work – the feeling being that firsthand experience in accurate measurements in the field of physical chemistry was of prime importance in developing good chemical engineers. This assumes, of course, that the laboratory course is well planned for the needs of the chemical engineers.

In connection with M.I.T.'s program to reduce the number of "contact hours" in the freshman year, the Committee was not in favor of cutting the laboratory requirement for freshman chemistry from three to two hours a week. While the present schedule represents a considerable number of contact hours, the laboratory atmosphere is informal, and if students learn to plan their work it is usually finished within less than three hours. Time is required to assemble

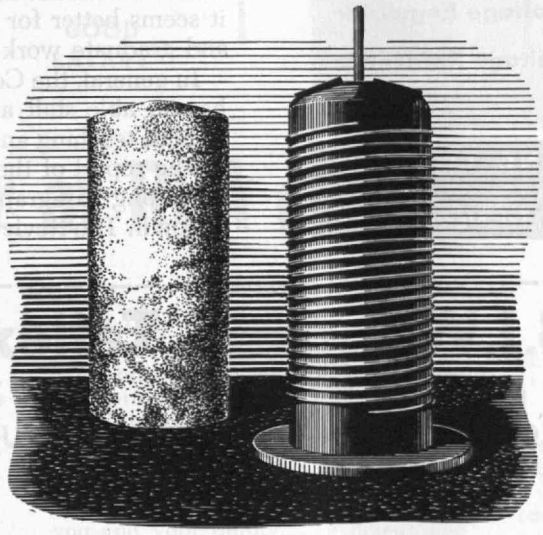
(*Concluded on page 158*)

* New York: Harper and Brothers, 1953.

† Members of this Committee for 1952-1953 were: Pierre F. Lavedan, '20, chairman, Robert E. Wilson, '16, Crawford H. Greenewalt, '22, John M. Gaines, '26, John G. Kirkwood, '29, William M. Holaday, and Paul L. Salzberg.

# To our Colleagues in American Business . . .

Titanium melts at 3140°F., and copper at 1980°F. Hence most people would think it utterly impossible to melt titanium in a mold made of copper. Yet it is being done on a production basis. The trick is to make use of the high thermal conductivity of copper. The copper mold has a copper baffle wrapped in a spiral around it, and is inserted in a water jacket. Water is pumped at high velocity through the jacket, and spirals around the outside of the mold. Heat from the molten titanium is transferred quickly and efficiently by the copper to the water, and thus carried off. The copper never comes close to its melting point.



This remarkable application of copper is just a part of the tremendous activity in the field of titanium. Many companies are seeking ways to produce metallic titanium in large tonnages and at reasonable prices. Among other applications, it is used in certain jet engine parts that are subjected to high temperatures and the impact of gases that are moving at terrific velocities.

Eventually ways will be found to produce titanium in large volume at practical prices. This will be a great boon. It is the fourth most abundant metal in the earth's crust, only aluminum, iron and magnesium being present in greater amounts. It can be easily forged, welded, and hot worked. There is every indication that it is a metal with a tremendous future.

Copper is man's oldest metal, and titanium the newest. In this ingenious copper mold the old assists in the birth of the new. Copper serves in this way so often that for many years we have called it "the metal of invention." It helped make possible the telegraph, the telephone, electric light and power, and the multitudinous electronic devices used in communications, calculation, and medicine. For many centuries man has sought and found new ways to take advantage of copper's unique qualities.

It seems to Revere that there is something significant about this. Just because a material is old does not mean it cannot help in the search for the new, and thus advance the progress of us all. So we suggest that when modern developments engage your attention, older materials may be of assistance in reaching your objectives.

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*(Concluded from page 156)*

apparatus, and the reduction of the laboratory period to two hours would decrease its training value.

The Committee discussed the fact that the demand for M.I.T. trained chemists exceeded the number of men specializing in undergraduate chemistry. However, as certain interests and aptitudes are needed to make a good chemist, it was felt that efforts to encourage more students to enter Course V should be limited to making sure that the undergraduate teaching was of a character and quality likely to arouse the interest and enthusiasm of those who were by nature qualified for such work.

The graduate work in Chemistry attracts more students than the undergraduate course; in fact, the number receiving doctor's degrees is somewhat greater than the number receiving the B.S. from the undergraduate course. There is no difficulty in getting a full quota of well-qualified candidates from other institutions for graduate work and, in general, it seems better for men to take their undergraduate and graduate work in different schools.

In general, the Committee felt that the Department has an able staff and was making definite progress in both teaching and research.

The report of the Committee, as condensed in the preceding paragraphs, was made available for publication in The Review on August 6, 1953.

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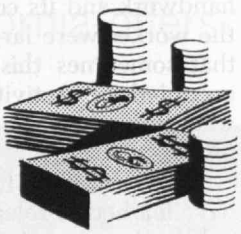

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## PSYCHOLOGY, THE MACHINE, AND SOCIETY

(*Continued from page 144*)

of the economic criterion, which was destroying the quality of the popular Ideal." Dr. Kirk summarized Keynes as asserting that "the final *reductio ad absurdum* of Benthamism is known as Marxism; drained of spirit and imagination by the gross objectives of the Utilitarians, we have ended defenseless before this brutal descendant of Bentham's philanthropy."

In many places today, therefore, a new conviction is growing that what ails our age is not some ancient political, economic, or social cancer, but rather a loss of the old understanding that virtue in the individuals who make up society is basic in creating a good, just, free, and achieving social order. The rash theorists and self-seeking politicians who have attacked existing organic social orders have often sneered at this age-old idea. For example, many of the self-styled liberals of the Nineteenth Century believed that a society could exist without religion, but this assumption has never been demonstrated through a series of generations. They also underestimated the importance of the slowly evolved traditional wisdom of mankind and the power of custom, that universal gyroscope of society, in the effective control of human beings and especially in the ordering of the lives of those of limited capacity in the use of abstract verbal principles. Practical ideals and a fixed scale of human values were recognized, taught, and acclaimed, if not always lived up to, by the old system. Politeness and courtesy, sometimes called the minor morals or the lubricants of society, also were handed down from the past to make social living more pleasant. All too often these intangible – and in some respects truly spiritual – characteristics of man's ancient morals were thrown out by would-be reformers with their superficially mechanistic ideas. There were, to be sure, injustices and inequities in all the old orders of society. But those who saw reform as the mere provision of more and more superficial entertainment and greater and greater idleness for larger and larger groups of people were set, it now appears, on copying the worst and not the best of the old society they were trying to overturn. As hours of work were decreased and pay increased, the economic feasibility of skilled handwork and its consequent artistic satisfactions to the worker were largely lost. It is a sad commentary that sometimes this precious new leisure has been occupied by activities no more constructive than wagering on dogs as they run after mechanical rabbits on a track.

Thus we return to the strange fact that men who have learned to release atomic energy, to bounce signals back and forth from the moon, to banish typhoid and yellow fevers, and to make electronic calculators do the work of tired brains, have failed to maintain the best intrinsic satisfactions, the highest ancient ethical and moral values and spiritual insights, in a changing society. It is all too clear that some of the

(*Continued on page 162*)

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## PSYCHOLOGY, THE MACHINE, AND SOCIETY

(*Continued from page 160*)

would-be doctors of society, unlike modern scientific physicians, failed to recognize that human beings are not all alike and that they have inborn characteristics that must be dealt with by those who would effectively improve society.

We are faced back to the conclusion that the basic psychology of those parts of human nature that are inborn ought not to be forgotten by the successful social engineer any more than the properties of metals can be disregarded by one who plans to construct a good television receiver. As Lewis Mumford once put it, in an address before the American Association for the Advancement of Science: "The tendency to overlook the human end which our automatic organizations serve has begun to pervade our whole civilization; and in the end, if it is uncorrected, it may effectually undermine our best achievements. . . . No matter how marvelous our inventions, how productive our industries, how exquisitely automatic our machines, the whole process may be brought to a standstill by its failure to engage the human personality or to serve its needs."

Radical social reformers have often tried to pretend that biological heredity was not important in psychology. William Godwin, a most fixed-eyed and unrealistic but strangely influential social reformer of the late Eighteenth Century, believed in the perfectibility of the human race in one generation if the environment could only be changed in the right way. Many later would-be reformers have unthinkingly accepted this view. Even the great John Stuart Mill suggested that anyone who believed in inherited traits was an advocate of social reaction. In our own time this old scientific heresy, that inborn differences between men of the sort measured by aptitude tests do not exist, is still proclaimed as a new truth in Russia. In holding this position at least at the verbal level, the steel-handed present-day Russian Communists are walking in the path of the visionary Nineteenth Century melioristic reformers who preceded them. Intelligence tests in education are now proscribed by Moscow. Such measuring devices are said to demonstrate differences that cannot exist in the so-called perfect environment of a communist state. It would be interesting to know through what back door a realistic recognition of inborn individual differences is now introduced in Russian education. That such

differences exist in Russia, as well as in America, is as sure as is the existence of chromosomes. It is true, of course, that modern psychology must deal with both inborn and culturally determined traits, for ordinarily both chromosomal determination and environmental forces co-operate in producing each physical or mental performance of every person. But to ignore inherited differences in individuals is to close one's eyes to most important facts.

Is it not fair to say, therefore, that one of the worst mistakes of the superficially mechanistic reformers of society has been their willingness to forget that society is made up of individual free organisms with conservative and yet varying brains and muscles? To put this in another way, is not a good society made up of bad individual men impossible? Certainly this is true, in spite of the satirical arguments of such tongue-in-cheek philosophers as Bernard de Mandeville who have attempted to assert that private vices make public benefits. A group of people of varying inborn abilities but alike in trying hard to be honest, unselfish, charitable, virtuous, diligent, self-reliant, and full respecters of private property, would not need to worry too much about external social or economic reform.

This point of view makes it clear that what Peter Viereck has well called the "revolt against revolt" should now challenge our full attention. Have we not been living too long in a world that has tried to pretend that social upheaval is always social progress? Destructive social reformers often have sweet-tasting and mysterious medicines to propose. Such men in our time begin by suggesting new legislation that seems to give something for nothing. Harold Laski, for example, always could attack what he called "privilege" as he advocated more socialization of industry. Envy may for a time be a satisfactory motive to be used by the selfish demagogue to get votes, but it is a bad sentiment on which to build a stable and achieving society. When legislation does not produce the results hoped for by the reformers, more and more police action is demanded. Those, however, who see that the organic structure of society must be maintained and slowly made better by improving the personal character of individual human beings are at a disadvantage in combating the schemes of the wholesale destructive advocates of social change. Those who believe in self-discipline first have no simple and easy patent medicine to prescribe. All that such conservative and true reformers can suggest is more adherence on the part of more people to the highest

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## PSYCHOLOGY, THE MACHINE, AND SOCIETY

*(Continued from page 163)*

ethical and religious teachings, and more of the right sort of education fitted for individuals of differing interests and inborn talents. Social improvement of this sort is usually within the reach of every individual, but it requires first the hard work of self-reform and not the iconoclastic fun of pulling down others who externally seem more fortunate or who have been more diligent and thrifty.

When we think here of the education of individuals, let us not forget that the objectives of education are in the last analysis socially determined. In our political democracy and our tested and effective, competitive, free, capitalist economy we all have a responsibility to see to it that our schools foster an education that makes possible the discovery of truth and the achievement of individual intellectual liberty. Harvard University's now justly famous book *General Education in a Free Society*[4] wisely begins with these words of Plato: "Youth is the time when the character is being molded and easily takes any impress one may wish to stamp on it. Shall we then simply allow our children to listen to any stories that anyone happens to make up and so receive into their minds ideas often the very opposite to those we shall think they ought to have when they are grown up?"

If this statement from the *Republic* is accepted, we are today challenged to re-examine the question as to whether, under the influence of a shallow and often misunderstood positivism and an incomplete naturalism, American education has not in the past generation turned too sharply away from all instruction that had as its aim the inculcation of fixed systems of values. If a free and stable society depends on citizens who act as they do because they are trying hard to live up to high ethical standards, then let us do what we can to raise up new generations that know what these standards and scales of values are.

It is easier, of course, to talk about the teaching of ethical and even aesthetic values than to say how such instruction should be given in a free democracy. Certainly, however, an education aiming to accomplish such ends will emphasize studies that acquaint the members of each new generation with the true wisdom of the race concerning the best ways in which

[4] *General Education in a Free Society* (Cambridge: Harvard University, 1945).

men can react to one another. The study of biology, anthropology, sociology, economics, political science, social history, psychiatry, and psychology will help in providing a basis for this understanding. But these fields alone will not provide the needed humanistic value scales because in their very nature these sciences must be objective and factual.

The conclusion seems forced upon us, therefore, with new inevitability that an education which is to make free, sensitive, socially responsible individuals with self-accepted value systems must emphasize the great body of studies, such as religion, law, history, and literature, that represents the noblest human wisdom of the past — "the best that has been thought and said in the world." To put this in another way, it seems that the education of individuals who are to have the persistence, the courage, and the stamina to reform themselves before they try to reform society will require a sympathetic study of the best parts of those strands of our intellectual tradition which we call the humanities.

This conclusion, of course, is not novel. Students here at M.I.T. are naturally and most properly offered unsurpassed opportunities to study the physical sciences and the whole range of modern applied technologies. In recent years, however, under the farsighted educational statesmanship of Karl T. Compton, Chairman of the Corporation, and James R. Killian, Jr., '26, President of the Institute, this world-renowned scientific research institution has emphasized basic instruction in the humanities. Thus an effort is made to have students here become not only scientists and technologists but also wise human beings who understand the intellectual, artistic, and spiritual traditions and values that mankind has gradually beaten out for itself through the ages. This fortunately is a point of view in higher education that today is sweeping to new recognition everywhere in America. The old destructive educational revolution of the last generation that tried to banish values from school and college work is being unmasked as a destroyer of much that was of first importance to a society.

In this great institution, and in others like it that are hospitable to many foreign students, it is good that this new point of view is being emphasized. Visiting students from other lands and cultures should not only be given our mathematical, scientific, and technological skills, but also should learn the true spiritual wisdom of our free Western world at its best.

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## PSYCHOLOGY, THE MACHINE, AND SOCIETY

(*Concluded from page 165*)

Therefore, in recapitulation, as we think of psychology, the machine, and society, a few basic conclusions emerge. Science in a most general sense has given great sections of modern men a high standard of living and an opportunity to provide themselves a life of health and comfort undreamed of in any ancient utopia. Further progress of this kind may be confidently expected if social and international disorder does not prevent it. Modern psychology, although still far from being able to provide final answers to all relevant questions, does show that man's understanding of his inborn and acquired make-up is important for technology and an understanding of society.

In spite of these demonstrated advances, pessimism about society is a dominant attitude of many thoughtful people in our day. Recent social upheavals aggravate this gloomy stand. Is it not conceivable, however, that in their faith in the possibility of social progress, Victorian intellectual leaders were nearer the truth than are some of our modern writers?

Man's mammalian characteristics are millions of years old, but man as a free intelligence is built to live in the future. The pilots of the atomic-powered airplanes of the year 2000 will have essentially the same conservative brain and muscles that our fathers possessed. Nevertheless, our growing knowledge of psychology, the machine, and society seems ready to help us make such future pilots and others of their generation ethically and socially wiser and more satisfied with life than we are. If we are to approach this better state it seems clear that we must be prepared to spend more money and thought than in the past on improving the quality of the instruction we offer to all the youth of our race. If we hope to have a finer and more achieving society, education fitted to the aptitudes of each individual is a most promising tool. As we plan for the future place of education in our social order, let us have the courage to act as though we believe that the golden age is ahead and not behind!

## DECORATIVE TILES

(*Continued from page 153*)

from those of continental Europe. These English tiles are one of the most interesting materials of the Gothic period and though somber in color, the designs were masterpieces of the medieval tilemakers. We can be reasonably sure that these tiles were made within the precincts of the monasteries. Confirmation of such a view can be found in the discovery of tiles in the Chapter House of Castleacre, in Norfolk, where there were said to be 39 monks and 48 benefactors. The motives combined geometrical combinations, conventional foliage, animals, heraldic emblems, and mythological figures, such as the griffin and the centaur, as shown in Fig. 14. Examples of this tilework have been found in the medieval cathedrals, parish churches, and abbeys, such as the great Malvern Pri-

(*Concluded on page 168*)

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## DECORATIVE TILES

(*Concluded from page 166*)

ory, the cathedrals of Gloucester and Westminster, the abbeys of Chertsey, Halesowen, and Keynsham. The cessation of this work dates from the Reformation, when the monasteries were dissolved and the craftsmen dispersed.

### *Renaissance Painted Tiles*

When the Gothic influence drew to a close, the tilemakers turned to the Renaissance of Italy for their inspiration. This movement started in the Thirteenth Century but it was not until the Fifteenth and Sixteenth Centuries that it attained its greatest development. Art and science led to social distinction, and the expression of individual talent and realism took the place of medieval obedience to the power of God; all of which was reflected in the painted tiles. These tiles (Fig. 13) were known as faience or majolica ware, the painting being applied over a stanniferous enamel. Public taste of the time can be judged from the following saying attributed to one of the clergy: "The inferior part of man will be in favor of Eastern porcelain, but the rational and intellectual will guide him to maiolica." It was unfortunate that these tiles were not used for wall decoration, for the soft glaze was not suitable for floor use and the designs were destroyed by constant wear.

The tile painters were tempted to copy the work of the great masters, and inspiration came from such painters as Leonardo da Vinci (1452-1519), Michelangelo (1475-1564), Titian (1477-1576), Raphael Sanzio (1483-1520), and many others.

The idea of painted tiles for pavements was carried to Germany and Switzerland during the Sixteenth Century and the technique was soon adopted by the makers of stove tiles. The spirit of the Renaissance almost vanished in the Seventeenth Century and it remained for the Netherlands to revive the use of tin-enameled tiles for wall decoration.

*Part II — "Decorative Tiles," covering the tilework of Holland, England, and the United States, will be published in the February, 1954, issue of The Review.*

## YELLOW FEVER'S ROLE IN HISTORY

(*Continued from page 146*)

fever, and others — as against only 400 deaths in battle. The depredations of yellow fever were so great in Cuba that at one time General Leonard Wood seriously considered withdrawal of his forces from the fever-ridden island in order to avert a disaster similar to that which had overcome the French in Santo Domingo.

By this time the mosquito was suspected but not proven as the carrier of yellow fever. As early as 1848 a wise doctor of Mobile, Ala., Josiah C. Nott, had suggested that insects, probably mosquitoes, were the vectors of yellow fever. In 1881 Dr. Carlos Finlay

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## YELLOW FEVER'S ROLE IN HISTORY

(*Concluded from page 168*)

of Cuba declared that mosquitoes were responsible. Already, in 1879, Sir Patrick Manson had shown that mosquitoes of a certain species carried the disease known as filariasis, and in 1898, Sir Ronald Ross, brilliantly demonstrated that malaria could be spread only by mosquitoes of the Anopheles tribe.

### *Conquest*

The rest of the story is well known. In 1900 Surgeon General George M. Sternberg of the Army appointed a board, headed by Major Walter Reed, to investigate the cause of yellow fever. With his associates, Drs. James Carroll, Jesse W. Lazear, and Aristides Agramonte, Major Reed began operations in Cuba and soon demonstrated that yellow fever is disseminated only by mosquitoes of a species then known as the *Stegomyia fasciata* and now more appropriately called the *Aëdes aegypti*. These famous experiments, in which Dr. Lazear lost his life, made possible the eventual conquest of yellow fever.

Equally well known is the sequel to this story; how Colonel, later Surgeon General, William Crawford Gorgas applied the facts made known by Walter Reed to conditions in Havana and later in Panama. Yellow fever had defeated the French under de Lesseps in their attempt to build a canal across Panama between 1880 and 1887, but the successful elimination of yellow fever and malaria in this area by Gorgas and his associates made possible the completion of this essential waterway by the United States.

In this noteworthy instance it was the conquest of yellow fever which unrolled a new map, just as a century and a half earlier it was yellow fever itself which charted a new territory for the United States.

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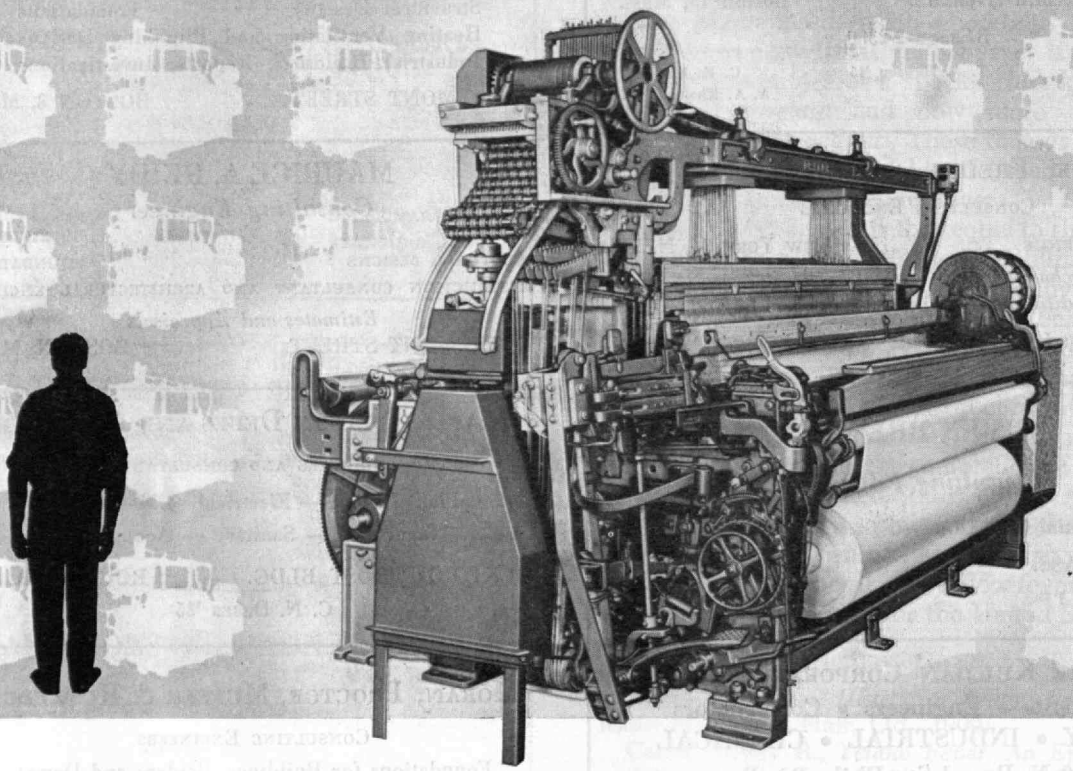
# weaving facts



With each new fibre comes an opportunity to builders of textile machinery. The Draper XD Loom is a model of versatility, primarily designed for weaving filament rayon and acetate. It now handles equally well newer *science* fibres, either filament or staple.

Nylon, dacron, orlon or acrilan fit this loom like a glove. A wide range of other fabrics, even including blends which require filling mixing, can also be woven.

By enabling one weaver to run as many as 80 looms, with speeds up to 192 picks per minute, the XD Model provides the answer to high production and top quality weaving.

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# *Gifts by Will*

TO THE

# Massachusetts Institute of Technology

The Institute emerged from World War II with a twofold financial problem. First, there was the immediate need for capital funds to finance the important conversion to peacetime activities in preparation for the many new responsibilities and opportunities which lay ahead. This need was met through the $20,000,000 Development Drive, the successful completion of which provided many urgently needed additions to plant and facilities and underwrote the Institute's educational program with a new strength and independence.

The second aspect of the Institute's financial problem is the need for sufficient new funds to guarantee the continuing support of its long-range program. This need must be met by grants from industry and foundations, by current gifts, and by bequests from individuals.

In the past, bequests have provided a very large part of the endowment and building funds which have been established and are helping to maintain many of our valuable educational institutions . . . . To safeguard the future of M.I.T., the number of "Gifts by Will" from Alumni and friends must be increased.

M.I.T. invites you to consider the opportunities for worth-while achievement in the years to come by including the "Massachusetts Institute of Technology" among those to benefit from the accomplishments of your life.

A booklet "Gifts by Will," outlining different forms of bequests to M.I.T., is available to you or to your attorney by writing to:

M.I.T. Development Office
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

# Alumni AND Officers IN THE News

## *Awards and Honors*

CHARLES M. SPOFFORD'93, Hayward Professor Emeritus, Department of Civil Engineering, has been made an honorary member of the American Society of Civil Engineers. The induction took place in the fall at the Society's meeting in New York.

GERARD SWOPE'95 received the Silver Stein Award on December 4 at the annual dinner of the M.I.T. Club of New York in the Commodore Hotel. Mr. Swope is the third recipient, succeeding Lester D. Gardner'98 and Thomas C. Desmond'09.

RAY P. DINSMORE'14, Vice-president in charge of research and development of the Goodyear Tire and Rubber Company, received an honorary membership in the National Council of the American Institute of Chemists. The Ohio Chapter of the Institute named Dr. Dinsmore to receive the annual award for his contribution to the advancement of chemistry.

COLONEL WILLIAM W. DRUMMEY'16, former Boston Commissioner of School Buildings, was presented the City of Boston Distinguished Citizen Citation and the M.I.T. Distinguished Alumnus Award at a testimonial dinner on October 28. DR. JULIUS A. STRATTON'23, Provost and Vice-president of M.I.T., and acting Mayor Francis X. Ahearn made the presentation.

CLAIR E. TURNER'17 was the recipient of the 1953 Elisabeth S. Prentiss National Award in Health Education. The presentation was made at the 13th annual meeting of the Cleveland Health Museum's National Advisory Council on November 10 in New York City. The Prentiss Award, named for the Health Museum's first benefactress and awarded during the American Public Health Association convention for the 10th consecutive year, is given by Museum trustees in recognition of outstanding achievements in the health education field. Dr. Turner's citation read: "A True Professor, Master Architect of School and Adult Health Education, Respected Author, World-Wide Lecturer and Consultant."

WALTER G. WHITMAN'17, Professor of Chemical Engineering and Head of the Department of Chemical Engineering at M.I.T., was honored by the American Institute of Chemists for his many contributions to the defense effort and his service to the profession. He was presented an honorary membership in the A.I.C. at a meeting of the New England Chapter at the M.I.T. Faculty Club.

HAROLD F. SMIDDY'20, Vice-president of General Electric Company, was the recipient of the Taylor Key Award for 1953, the highest honor of the Society for Advancement of Management. Mr. Smiddy was presented the award on October 29 at the S.A.M. conference in New York City. The award is given annually for outstanding work in promoting the principles of scientific management. The citation accompanying the award noted Mr. Smiddy's "eminent contribution as American representative of a professional organization dedicated to fostering management progress on a world-wide basis."

BERNARD LEWIS'23 received the honorary degree of Doctor of Science from Cambridge University in England. The degree was awarded in recognition of Dr. Lewis' outstanding contributions to the advancement of science.

JOHN G. KIRKWOOD'29, Chairman of the Department of Chemistry at Yale University, received the Gilbert Newton Lewis Medal for outstanding achievement in chemistry at a dinner meeting of the American Chemical Society's California Section in Alameda, Calif., on November 20. The Medal – honoring the memory of a University of California professor who was a world-renowned authority on chemical thermo-dynamics – was presented to Professor Kirkwood in recognition of his research on the chemical forces between molecules and his clarification of the structure of liquids and the behavior of proteins.

SIDNEY ROBERTS'39 and Mrs. Roberts were recipients of the annual Ciba Award for outstanding contributions to endocrinology. Dr. and Mrs. Roberts were honored in recognition of 10 years of significant research in the field of endocrinology.

## *Top-Rung Alumni*

ADMIRAL EDWARD L. COCHRANE'20, Dean of the School of Engineering at M.I.T., was appointed a member of the newly created Port of Boston Commission. Admiral Cochrane will serve a four-year term.

EARL H. EACKER'22, President of Boston Consolidated Gas Company, was elected president of the American Gas Association at the opening sessions of a three-day annual convention of the Association in St. Louis, Mo.

ROBERT C. SPRAGUE'23 has been appointed by the Senate Armed Forces Subcommittee on Preparedness to direct a full-scale study of hydrogen and atomic bomb defense.

MANUEL S. VALLARTA'23 has been appointed assistant secretary of education for the Republic of Mexico.

STANLEY P. FOSGATE'24, former Vice-president of the Lon Worth Crow Company, was appointed a vice-president of Stockton, Whatley, Davin and Company.

REAR ADMIRAL ALFRED M. PRIDE'26 has been chosen new commander of the Far Eastern Seventh Fleet. Admiral Pride is a veteran of 36 years' service.

HERBERT C. JOHNSON'27 has been elected vice-president in charge of sales of the Kuljian Corporation in Philadelphia.

GEORGE I. CHATFIELD'28 was promoted to executive vice-president of the William Esty Company, advertising agency, in November.

RICHARD T. KROPF'31, Vice-president and Director of Research of Belding Heminway Company, Inc., has been elected to the board of directors of that company.

WALTER G. BAIN'36 was appointed to the newly created position of executive assistant to the president of Republic Aviation Corporation. Mr. Bain was recently a major general in the U.S. Air Force.

WILLIAM R. HEWLETT'36, Vice-president of Hewlett-Packard Company, Palo Alto, Calif., was accorded one of the nation's highest professional honors with the announcement of his election as president of the Institute of Radio Engineers for 1954.

MAJOR GENERAL EMERSON L. CUMMINGS'33 was appointed chief of Army Ordnance. General Cummings is the youngest chief appointed since World War I.

ROBERT H. WINTERS'33 has been appointed minister of public works in Canada. He was former minister of resources and development.

KENNETH L. COOK'39 has been named head of the department of geophysics at the University of Utah.

WILLIAM C. BROWN'41, Manager of Raytheon Manufacturing Company's magnetron research and development laboratories, has been appointed an assistant vice-president of the company.

LEWIS D. FYKSE'41 has been named vice-president in charge of sales of the forging, die casting and truck and body hardware divisions of the Cleveland Hardware and Forging Company.

FELIX S. PALUBINSKAS, 2–44, was named to the rank of professor in the engineering division of Lowell Technological Institute. Dr. Palubinskas will take charge of the preparation of the electronics engineering course at the college.

SHEPARD BARTNOFF'49 has been appointed associate professor in the physics department of Tufts College.

FRED LANDIS'49 has joined the ranks of assistant professors of mechanical engi-

neering at New York University's College of Engineering.

## *Scientific Selections*

CHARLES B. BREED'97 and the late George L. Hosmer are the coauthors of the seventh edition of a book entitled *The Principles and Practice of Surveying, Volume II—Higher Surveying* (New York: John Wiley and Sons, Inc., 1953, $7.00).

HAROLD E. BABBITT'11 has written the seventh edition of a book entitled *Sewerage and Sewage Treatment* (New York: John Wiley and Sons, Inc., 1953, $8.00).

J. HARLAND BILLINGS'15 has written the third edition of a book entitled *Applied Kinematics* (New York: D. Van Nostrand Company, Inc., 1953, $4.50).

LAURIN ZILLIACUS'16 is the author of a popular history of the world's postal service. His book is entitled *Mail for the World: From the Courier to the Universal Postal Union* (New York: John Day Company, 1953, $3.00).

JAMES H. DOOLITTLE'24 is the subject of a biography entitled *The Amazing Mr. Doolittle* by Quentin Reynolds (New York: Appleton - Century - Crofts, Inc., 1953, $3.95).

RICHARD F. SHEA'24 is the editor of a new book entitled *Principles of Transistor Circuits*, the first of its kind in the field. (New York: John Wiley and Sons, Inc., 1953, $11.00).

HUNTER ROUSE'29 and Joseph W. Howe are coauthors of a book entitled *Basic Mechanics of Fluids* (New York: John Wiley and Sons, Inc., 1953, $4.50).

RICHARD B. ELLIS'30 and Alfred P. Mills have written a new *Laboratory Manual in Physical Chemistry* (New York: McGraw-Hill Book Company, Inc., 1953, $3.50).

ARNOLD P. G. PETERSON'37 and LEO L. BERANEK, Associate Professor of Communications Engineering and Technical Director of the Acoustics Laboratory at M.I.T., are coauthors of a *Handbook of Noise Measurement* (Cambridge, Mass.: General Radio Company, 1953, $1.00).

CHARLES KITTEL'38 has written a textbook entitled *Introduction to Solid State Physics* (New York: John Wiley and Sons, Inc., 1953, $7.00).

PHILIP M. MORSE, Professor of Physics at M.I.T., and HERMAN FESHBACH'42 are coauthors of a book entitled *Methods of Theoretical Physics* (Two Volumes) (New York: McGraw-Hill Book Company, Inc., 1953 $15.00 each volume).

ALEXANDER KUSKO, 2–44, assisted WILLIAM H. TIMBIE, Professor of Electrical Engineering and Industrial Practice, Emeritus, M.I.T., in writing the fourth edition of a book entitled *Elements of Electricity* (New York: John Wiley and Sons, Inc., 1953, $5.50).

CECIL E. HALL'48, Associate Professor of Biology at M.I.T., is the author of a book entitled *Introduction to Electron Microscopy* (New York: McGraw-Hill Book Company, Inc., 1953, $9.00).

GEORGE DE SANTILLANA, Associate Professor of the History of Philosophy and Science at M.I.T., has written a book entitled *Galileo Galilei: Dialogue on the Great World Systems* (Chicago: University of Chicago Press, 1953, $12.50).

WALT W. ROSTOW, Associate Professor of History at M.I.T., in collaboration with Alfred Levin, and with the assistance of others at the Center for International Studies at M.I.T., has written a book entitled *The Dynamics of Soviet Society* (New York: W. W. Norton and Company, Inc., 1953, $3.95).

## *Science Rostrum*

F. ALEXANDER MAGOUN'18 addressed a meeting of the Greater Lawrence Industrial Management Club in the fall. Mr. Magoun's subject was "Discipline and Disciplining."

HORATIO L. BOND'23, Chief Engineer of the National Fire Protection Association and President of the M.I.T. Alumni Association, was one of two featured speakers at the association's regional conference held at the Sheraton-Biltmore Hotel in Providence. Mr. Bond's talk centered on the subject of fire problems in an atomic attack.

NATHANIEL H. FRANK'23, Professor of Physics at M.I.T., gave a talk at Hebron Academy at the Science Meeting on the occasion of the 150th anniversary of the founding of the Academy. "Importance of Science in National Affairs" was the title of Professor Frank's talk.

CHARLES A. THOMAS'24, President of Monsanto Chemical Company, discussed the problems of atomic energy development at a meeting of the American Petroleum Institute in St. Louis, Mo., in November.

MAJOR GENERAL FRANK D. MERRILL'32, Public Works and Highways Commissioner of New Hampshire, was the featured speaker at the American Petroleum Institute session on government relations held in Chicago in the fall. General Merrill discussed problems of state highway development. His talk was entitled "Wanted—A New Lubricant."

HERBERT H. UHLIG'32 spoke on the subject "Passivity of Metals and Adsorption," at a conference on properties of surfaces sponsored by the New York Academy of Sciences Section of Physics and Chemistry, held in New York City.

WALTER C. VOSS'32, former Head of the Department of Building Engineering and Construction, addressed a dinner meeting of the Home Builders Association of Greater Boston. The title of Professor Voss's talk was "Factors Contributing to Present High Home Construction Costs."

THOMAS R. CAMP'25, RUSSELL C. BUEHL'33, and EDWARD C. DENCH'40 were among the speakers at a meeting of the American Society of Safety Engineers which was held in Boston and Cambridge, November 2 through November 5.

LORING G. MITTEN'47, Assistant Professor of the Department of Industrial Engineering at Ohio State University, discussed "Statistics, a New Tool in Industrial Engineering," before the Cincinnati Chapter, the American Institute of Industrial Engineers which met in Cincinnati in the fall.

GEORGE R. HARRISON, Dean of the School of Science, discussed the production and use of solar energy at a meeting of the National Academy of Sciences which was held in Cambridge, Mass., November 9 to 11. At the same meeting, 20 papers on a wide variety of topics from airplane wings to vortex wake were presented by 27 members of the M.I.T. Faculty and research staff. Those giving papers before this distinguished scientific society were: I. Amdur, H. Ashley'48, Manson Benedict'32, R. L. Bisplinghoff, John M. Buchanan, Martin J. Buerger'24, Charles D. Coryell, J. P. Den Hartog, Albert G. H. Dietz'32, Donald C. Dittmer, M. Fixman, A. von Hippel, Osman K. Mawardi, E. Orowan, Alexis C. Pappas, B. Rossi, A. R. Shultz, Milton Shaw, H. G. Stever, W. H. Stockmayer'35, C. Gardner Swain, Laurens Troost, Herbert H. Uhlig '32, H. M. Voss'50, B. E. Warren'23, Abraham Zakay, and G. Zartarian, 2–44.

## *Obituary*

ERASTUS WORTHINGTON'85, October 17.*
JAMES P. GILBERT'89, October 17.
JESSE H. BOURNE'95, November 18.
GEORGE F. SHEPARD'95, March 27.*
WINTHROP H. CHENERY'96, October 18.*
ARCHIBALD L. PARSONS'97, September 24.*
GEORGE W. ADAMS'98, October 22.*
JOHN V. BEEKMAN, JR.,'00, October 28.*
FREDERIC W. SOUTHWORTH'00, September 1.*
LEO W. STANDISH'00, August 10.
RUSSELL SUTER'00, October 27.*
FRANCIS E. CADY'01, November 3.
GEORGE E. MARSH'01, October 16.*
JAMES F. MONAGHAN'01, September 17.*
STEPHEN R. BARTLETT'03, August 29.*
FRANK C. REED'03, September 17.*
WALTER G. BENT'05, October 23.*
EDWIN D. A. FRANK'06, April 28.*
TOM R. COLE'14, June 30, 1952.*
HAROLD L. COLBY'15, November 10.
CHARLES G. PAINE'15, November 22.
ST. E. TOWER PIZA'15, October 26.*
PAUL B. THOMAS'16, November 4.*
DONALD H. MONTGOMERY'18, August 13.*
VIRGIL D. COLLINS'20, September 30.
WALTER M. CUSICK'20, 1952.
JAMES F. DOWNEY, JR.,'22, October 4.*
ROBERT P. HIDDEN'22, October 9.*
HALFDAN CLAUSEN'23, June 29.
HARRY E. TERRELL'24, October 6.*
EUGENE L. SAHUD'30, July 14.
MENDEL N. PACK'31, June 13.
DAVID A. DAVIS'52, June 11, 1952.

* *Mentioned in class notes.*

# News from the Clubs and Classes

## CLUB NOTES

### *M.I.T. Association of Baltimore*

Professor Theodore Wood, Jr., Associate Professor of English and History, was the guest of honor at the club dinner held at the Broadview Apartments on November 3. Professor Wood brought us up to date on the activities at the Institute and answered questions put to him by members. He also sang a number of selections for us, accompanying himself on his guitar.

The Club plans to have a meeting during the winter, so watch for a notice, and we hope those who were unable to attend this meeting will be present at the next. — Randolph J. Peterson'27, *Secretary-Treasurer*, 4007 Deepwood Road, Baltimore 18, Md.

### *M.I.T. Boston Luncheon Club*

The first meeting of 1953–1954 season was held at the Union Oyster House on October 22 with an attendance of 65. Dr. George R. Harrison, Dean of Science, spoke on "Science Progresses." At the present time, there are about 400,000 engineers and 200,000 scientists in the United States, and Dean Harrison cited the need to double the number of scientists and add 50 per cent to the number of engineers in this country in the next few years. (Russia, incidentally, is estimated to be turning out some 80,000 engineers a year.) How is it possible to meet our needs?

Approximately one half of all college students drop out before completing their training — some for academic reasons, others for financial reasons and change of interests, and so forth. The rate at M.I.T., although lower than this national average, is currently around 35 per cent. If those who fall by the wayside could be replaced, our requirements for scientists and engineers could be met, and there is reason to think that this objective is possible. Various studies indicate that an equal number of boys who might be competent in these fields fail to discover their own aptitude and potential interests in time. The greatest reason for this failure may be laid squarely on the presentation of science in high schools. A modern tendency is to substitute "snap" courses for courses in chemistry and physics. Properly equipped laboratories for the latter studies are often considered too expensive; but more important is the inadequate training of teachers and utterly inadequate licensing requirements which demand so many courses in education at the sacrifice of actual science training. M.I.T. has tried to help solve this problem by offering summer refresher courses in science to secondary school teachers, for which the Westinghouse Foundation has established 50 fellowships each year for the past five years. But with the present scale of pay for high school teachers, the colleges cannot honestly steer promising young men into secondary school teaching as an attractive career. Dean Harrison turned to a brief sketch of the physicist's use of particle accelerators these days in nuclear research. To progress in the investigation of the atom through the study of electron rings and into the study of the atom's nucleus, constantly larger particle accelerators have been required. The available potential, or electrical cliff, has risen from the few million volts of only a few years ago to the 30 million volt cyclotron, thence to the 350 million volt synchrotron, and finally to the 3 billion volt cosmotron at Brookhaven. Thirty billion volt super-cosmotrons are now being planned. There seems to be no end to the demands of physicists for higher and higher electrical cliffs in order to increase our understanding of nuclear structure, in which more than 20 different particles have already been identified. Dean Harrison is optimistic on the peaceful uses of atomic energy in the future, as he believes we will be able to raise the percentage of energy recovered, currently only 1/10 of one per cent from uranium, and ultimately to use more commonplace elements, such as iron. — Vincent T. Estabrook'36, *Secretary*, 50 Congress Street, Boston 9, Mass.

### *M.I.T. Club of Buffalo*

On October 26 the Club held a very successful dinner meeting at Hotel Sheraton in Buffalo. The occasion was sparked by the presence of Warren Rohsenow, Associate Professor of Mechanical Engineering, who spoke to us about research at the Institute. Everyone was perfectly delighted with his able and extremely intellectual presentation. Those who attended the meeting were: Emmette Izard'29, President, Gabe Hilton'15, Harold Mitchell'12, Ed Germain'38, Chris Kurtzmann'09, Fernando Blanc'52, Dan Mitchell'34, Clem Syverson'50, Fred Bretschger'48, Joseph Bray'40, Ed Foster '33, Paul Skogstad'45, Bob Hudders'51, Don Wilson'51, Bill Hawe'52, Owen Knapp'37, Dan Hardie'51, Carl Bunker, Jr.,'32, Arnold Dutton'23, George Duryea, Jr.,'50, Ralph Reis'48, George Easter'15, Arthur Bond'15, William M. Hendrich '42, John Hendrich'42, Nelson Stone'15, Dick Koegler'36, Whit Ferguson'22, Tom Speller'29, Ben Buerk'30, John Bowman'20, Lee Jones'16, Walter Sherry'37, Joseph Engle'37, Stuart Gordon'09, Larry Lombardi'36, Don Welch'26, Whitie Handwerk'53, Dan Fairbanks'53, Dan Johnson '31, Bob Harper'52, Jim Neal'15, John Earshen'50, Charles Murphy'51, and Clarence Wagner'53. — Christian Kurtzmann'09, *Secretary-Treasurer*, 50 Normal Avenue, Buffalo 1, N. Y.

### *M.I.T. Club of Chicago*

Early in November Dean Bowditch came out here to meet with the loyal group of workers who are selling M.I.T. to the best prospective students. It is apparent that the group is well organized for the coming year under the very able leadership of Phil Coleman'23. Many of us were further educated by members of the staff and faculty at the University of Chicago at our opening meeting of the year early in October. The main feature of the evening was a trip through the Synchrocyclotron. Les Kornblith'38, our Treasurer of last year, is one of the leading lights of the operations at this institute of research. Interestingly enough, they are looking for problems for which they have the answers in their research. The shielding equipment to protect personnel against radioactivity is most massive and impressive. The vast electromagnets were not operating on this visit, but on a previous visit, your Secretary had the peculiar experience of having his pocket knife nearly jump out of his pocket when it was in the field of the electromagnet. In those "prehistoric" days when your Secretary was in school, the characteristics of the molecules were little more than theory. Our hosts at the the University of Chicago showed us a highly magnified, greatly speeded up movie of molecules, their nuclei and genes dividing. This show was put on by the Director of the Biophysics Research Laboratory and was most interesting.

Other meetings now being planned for which we hope to have definite information at a later date are: Edward L. Ryerson'09 meeting on November 30; a visit to the long-distance transmission system of the American Telephone and Telegraph in January or February; the Killian '26 and Schell'12 dinner in March or April, and a most unusual and fascinating trip, if it can be arranged in May, when it is hoped that we can listen, look, lunch and tour on a special train which will make a circuit of the Chicago Belt Line which feeds such a large amount of Chicago's industries.

It would seem entirely appropriate if we all sang *When Johnny Comes Marching Home Again*, for our John Barriger '21 is back among us after a brief sojourn in the east with the New York, New Haven, and Hartford Railroad. He is now vice-president of the Rock Island Road, and we are all very glad to have him back among us. Philip W. Creden'27, XV, was recently promoted to director of public relations for Edward Hines Lumber Company. We all wish him the best in his new capacity. Speaking of public relations, our last year's Secretary Bob Reebie '43 had a nice group of pictures and a good article published in the Neighborhood Section of the *Tribune* on Thursday, August 6, in which he expedited the moving of equipment for an entire plant. For

those of us who have been around these parts for more than a year or two, we will remember well Ed Farrand'21 who was president of the Club a few years ago. Phil Coleman'23, you will be interested in knowing, recently had a pleasant visit with Ed in Georgia where he is growing pecans, peanuts, corn, and livestock.

I am sorry to relate that Eugene Sahud '30, IV-A died on June 14 at Hines Hospital. Gene was friendly to everyone no matter how well you knew him. We have already expressed our sympathy to his family in their loss and ours. — ALFRED S. ALSCHULER, JR.,'35, *Secretary*, care of Friedman, Alschuler and Sincere, 223 West Jackson Boulevard, Chicago, Ill.

### *M.I.T. Club of the Lehigh Valley*

The annual fall meeting of the Club was held on Thursday evening, October 29, 1953, at the Allentown-Bethlehem-Easton airport. Following cocktails and dinner, Wilfred M. Post, Jr.,'36, Manager of the airport, gave a talk on the development of the local airport facilities, some of the problems encountered in airport management, and the future plans for the airport. After Wiley's talk, the group made a tour through the airport facilities. We in the Lehigh Valley are rather proud of our airport facilities, and it was obvious that their management is in good hands. The long-range nature of the problems arising, and the conflicting points of view which must be reconciled, were skillfully covered by Wiley.

Henry Moggio'28, presided at our meeting. It was announced that the winter meeting would be held in Allentown in February. For this meeting, we are attempting to obtain a speaker from M.I.T. It is hoped that we will have as guests at the winter meeting some of the high school principals and guidance counsellors. The following attended the meeting: Wilfred M. Post, Jr.,'36 Henry Moggio, '28, Harry T. Lyons'27, Edmund J. Flynn '19, Charles W. Gotherman'13, Bartow V. Reeves'12, James Stengel'50, Floid M. Fuller'06, Joseph F. Libsch'40, William M. Cline, Jr.,'29, Albert C. Zettlemoyer'41, James V. D. Eppes'50, Malcolm A. Bird '47, George Conard'52, Arthur F. Gould '38, Donald J. Blickwede'48, Edward A. Richardson'19, Michael V. Herasimchuk '39, Hugh H. Brenan'25, and John D. Briggs'42.

Every attempt has been made to keep up to date the list of M.I.T. Alumni in the Lehigh Valley area. It is hoped that anyone in the area who wishes to receive notices of meetings and who is not now receiving them will contact the Secretary at the address shown below. — JOHN D. BRIGGS'42, *Secretary*, 130 Wall Street, Bethlehem, Pa.

### *M.I.T. Club of the Miami Valley*

The Club met on November 4 at the Dayton Y.M.C.A. for dinner and a talk by Mr. Philip Stoddard of the M.I.T. Department of Business Administration. Phil brought us up to date on the building program at Tech with amusing anecdotes to fill in the statistics on housing, the new auditorium, and the proposed chapel. Changes in Tech entrance requirements, staff, and curricula were also mentioned. Among those present were L. Luzern Custer'13 and Colonel James O. Cobb'51, who entertained us at a short "bull session" after the meeting with tales of experiences in South America and ballooning. Mr. Stoddard's visit to Dayton was climaxed the next morning with visits and interviews with students at Fairview, Fairmont, and Oakwood High Schools. Edward Barney'42 and David Moyer, 2–46, the educational counselors for two of the schools accompanied Mr. Stoddard for their visits. — E. E. BARNEY'42, *Secretary*, 1720 Academy Place, Dayton 6, Ohio.

### *M.I.T. Club of New York*

During the annual meeting of the American Society of Civil Engineers, held in New York during the week of October 18, there was a dinner meeting of M.I.T. civil engineers on the evening of October 22. Arranged by the M.I.T. Club of New York, it was attended by 60 Alumni including Dean of Engineering E. L. Cochrane'20 and the following staff members of Civil and Sanitary Engineering: J. B. Wilbur '26, M. J. Holley'39, R. J. Hansen'48, T. W. Lambe 2–44, J. M. Biggs'41, D. W. Taylor'34, H. P. Aldrich, Jr.,'47, J. W. Daily, H. Simpson'48, V. Roggeveen, J. S. Archer'48.

Edward Wininger'24 was dinner chairman and William H. Correale'24 was toastmaster. Admiral Cochrane and Department Head J. B. Wilbur were the speakers. Professor Wilbur reported on the latest news of the Department of Civil Engineering including the decision to close Camp Technology. — RALPH C. WILTS'41, *Secretary*, American Blower Corporation, 50 West 40th Street, New York 18, N. Y.

### *M.I.T. Club of Northern California*

Sixteen Alumni of this area not only treated their wives to a dinner in San Francisco's colorful North Beach at the San Remo Restaurant, but also heard from Thomas P. Pitre, Director of Student Aid and Associate Dean of Students, and installed a new slate of officers.

Mr. Pitre explained to the gathering the opportunity that is available for the prospective student with small financial assets to gain an M.I.T. education. There are three sources of self-help open. First there is the opportunity for part-time work on the campus, as it is not expected that a student could carry a full-time job and still keep up with his scholastic job. Secondly, there are scholarships available to permit a student to capitalize on his ability to earn at least some part of his tuition. And, thirdly, when all other resources have been exhausted, the student can borrow from the Student Loan Fund. The terms of the Loan Fund are very liberal — interest is low, and repayment time makes it a very small burden for a student in his later life. Even in spite of M.I.T.'s high tuition, there is still the opportunity for an ambitious young man who really wants an M.I.T. education.

The nominating committee of past club Presidents, E. J. Riley'09, H. J. Berg'15 and A. B. Court'10 presented the following slate: R. E. Keyes'40, President, Gen. R. H. Van Volkenburgh'20, Vice-president, R. E. Paine, Jr.,'27, Vice-president, Peninsula, J. H. Arnold'31, Vice-president, East-Bay, and C. E. Moffet'41, Secretary-Treasurer. The slate was duly nominated and elected. Bert O. Summers'34 was named Secretary-Treasurer Emeritus as a fitting title in view of his many years of service to the Club as Secretary-Treasurer.

Alumni present were G. D. Whittle'08 (recently returned from Liberia), Captain A. B. Court'10, General R. H. VanVolkenburgh'20, M. H. Finley'24, I. D. Beals'27, R. E. Paine Jr.,'27, H. S. Gardner'30, J. H. Arnold'31, B. O. Summers'34, W. O. Thompson'35, A. W. Horton, Jr.,'36, R. E. Keyes'40, W. D. McGuigan'42, C. F. Ames, 10–44, T. Noyes, 2–44, and Hymen Resnick'49.

The Club's next formal meeting is scheduled as a luncheon for our old friend Lobby, due here on December 15. Our Tuesday informal luncheons still continue at the New Delmonico Restaurant at 328 Sutter Street, San Francisco. Just look for some of us in the mezzanine. — CLIFFORD E. MOFFET'41, *Secretary*, 2058-45th Avenue, San Francisco 16, Calif.

### *M.I.T. Club of Northern New Jersey*

The Fall Smoker, first meeting of the 1953–1954 year, with President Glenn Jackson, Jr.,'27, presiding, was held on October 22 at the Hotel Suburban, East Orange. Movies, food, and fellowship proved a happy combination by one of the largest turnouts in recent years. No less than 93 moved past Treasurer Joe Wenick'21 at the door, and Joe spent a busy half hour issuing membership cards. The old-timers turned out in good force, and a gratifying number of men from Classes of the past five years were on hand.

*Men of Science*, first of the featured movies, has already been seen by many Tech men in regular movie houses. It is a Pathe-R.K.O. educational short depicting work, life, and recreation at M.I.T. The other film, *The Transcontinental Story*, was supplied through the courtesy of the Transcontinental Pipe Line Company. It is a colored sound picture showing planning, engineering, and construction of the natural gas pipe line from Texas to New York in 1950–1952. Surveying the line, clearing the land, fabrication and transportation of the pipe, ditching, welding, laying, preserving — all phases are clearly and advantageously portrayed.

On the business side, Sumner Hayward '21, Chairman of the Educational Council, reported on Bat Thresher's September 23rd visit to Northern New Jersey and his meeting with the Club's officers and Educational Council. Joe Wenick reported finances in good shape and membership running way ahead of last year. President Jackson invited men interested in working in club affairs to come forward and make their interests known. Their participation would be indeed welcome.

Refreshments of sandwiches, pretzels, beer, and soft drinks were in plentiful supply, and the crowd lingered long in the social wind-up of the evening. Next meeting is scheduled for January 27. —

RUSSELL P. WESTERHOFF'27, *Secretary*, 823 East 23rd Street, Paterson, N. J. WARREN J. KING'48, *Assistant Secretary*, 336 B Plaza Road, Fair Lawn, N. J.

### *M.I.T. Club of Rochester*

The annual meeting and steak roast was held as scheduled, despite the inclement weather, on September 19. For many years, the elements have favored the Club on the day of the annual picnic, but it was too much to hope that our winning streak would continue forever. Chilly rain notwithstanding, 35 stalwarts were on hand to enjoy what seemed to be the best bill of fare yet engineered by the picnic committee. Chairman of the committee, Clarence Wynd'27, was assisted by Jim Rial'47, Warren Bishop'44, Bill Hosley'48, and Jim Littwitz'42.

Officers elected to serve for the following season were: President, Clarence Wynd'27; President-elect, Dwight VandeVate'22; Vice-president, Richard M. Wilson'30; Secretary, Frederick J. Kolb, Jr.,'38; Assistant Secretary, William N. Hosley'48; Treasurer, Charles C. Park'50. Frederick F. Tone'35 was elected for the term 1953–1956 to join Alfred E. Castle '40 and David Babcock'33 as Members-at-Large of the Executive Committee of the Club.

Treasurer William Halbleib'48, reporting on finances, noted that there were 152 dues-paying members last year compared with 133 the year before. Fred Kolb announced that at the April meeting of the Scholarship Committee, 18 applicants were interviewed and awards were made to 11 of these young men in varying amounts. Total awards came to $5,200, $1,000 of which were made from the funds of the Club; the balance was furnished by the Institute.

Much of the success of this year's scholarship program is the result of the work of the Educational Counselors who have been active in the Rochester area high schools talking with outstanding young men about the merits of scientific and engineering education in this modern age.

At the October 29th meeting of the Club, Professor Warren M. Rohsenow of the Department of Mechanical Engineering at M.I.T. took time out from his tour of secondary schools to explain how new technological developments have fostered new trends in engineering education. In his talk, Professor Rohsenow reviewed the evolution of teaching methods from the handbook type of teaching that was conducted until the mid-1930s through the analytical approach which continued until the development of the present "methodology" or case-method way of teaching. Members left the meeting realizing that more than the physical layout of the Institute has undergone a great change in the past few years. Professor Rohsenow indicated that current graduates are better prepared than ever before to go out into industry ready to challenge old concepts and to apply creative thinking to new problems. – FREDERICK J. KOLB, JR.,'38, *Secretary*, 211 Oakridge Drive, Rochester, N. Y. WILLIAM N. HOSLEY'48, *Assistant Secretary*, 234 Croydon Road, Rochester, N. Y.

### *M.I.T. Club of Southern California*

Aid to the students was the subject of a meeting at the Garden Room of the Huntington Hotel in Pasadena on October 28. In the spread-out territory of the Los Angeles Alumni it is difficult to hold smaller meetings that are convenient to members, and this was the first meeting in years held in Pasadena. It was jokingly referred to by President MacCallum'24 as the Pasadena Branch of the Southern California Alumni.

Dean Pitre gave a very clear picture of the Institute's sources of aids to students, the variety and purpose of such funds, and how they applied to students from this area. He announced a new scholarship fund that had just been granted by a local firm amounting to $10,000 for the benefit of Southern California students going to M.I.T. Until the details were worked out, he withheld the name of the donor. Interest of the members in the subject was reflected in the many questions which were answered very ably by Dean Pitre.

Dean Jaeger, who heads the co-operative arrangement at Pomona with M.I.T. was a guest of the Association. Others present were: Zenos M. Briggs'00; Herbert H. Calvin'12; Page Golsan'12; Rockwell Hereford'24; William H. MacCallum'24; Robert E. Hiller'31; Page Golsan, Jr.,'34; Oscar Hakala'35; Robert S. De Wolfe'36; George Piness, Jr.,'49; and Robert Fowble '52. – HIRAM E. BEEBE'10, *Review Correspondent*, 1847 North Wilcox Avenue, Hollywood 28, Calif.

### *M.I.T. Club of Washington*

The cold wintry blasts of the evening of November 5 could not dampen the ardent spirits of some 100 Alumni and their guests who gathered for the annual social meeting (stag) of the Club. I wonder if the 30-odd gallons of beer consumed during the evening were responsible for maintaining the warm atmosphere.

The loyal sons gathered at the historic Potomac Boat Club on the shores of the Potomac River in Georgetown, and the rafters vibrated with the strains of their famous Tech songs. Devoid of movies, speakers, and other formalities, a warm renewal of old acquaintances and the meeting of new Alumni added to the social atmosphere. A plentiful supply of cold cuts, cheese, bologna, ham, and dressings, helped to create informal sociability and good feeling.

The Club's quartet, led by Larry Conant '21, Nick Stathis'29, and Ed Bacon 9–46, rendered selections worthy of the finest of the S.P.B.Q.S.A. For the frail old-timers, a cozy room provided with an open fire and conveniently adjacent to the bar, was made available. – EDWARD J. BACON, 9–46, *Review Secretary*, 2262 Hall Place, N. W., Washington, D. C.

### *M.I.T. Club of Western Maine*

The Club's 1953 fall meeting was held on November 6 in the Columbia Hotel in Portland. The featured speaker was James M. Austin, Associate Professor of Meteorology. His subject, "What's Wrong with the Weather Forecaster," had a general appeal and was most interesting.

Club officers were elected for the coming season. John F. Langmaid, Jr.,'31, was elected president; and Robert B. Follansbee'32 was named secretary-treasurer.

About 40 Alumni and their guests attended the meeting. Leon Ephross, a candidate for admittance to M.I.T., brought three other seniors from Kennebunk High School. Their names are: David Wentworth, Dick Post, and Raymond Brearey. Others present at the meeting were: Stan Weymouth'19, Mr. and Mrs. Harold E. Searles'31, Elmer W. Campbell'21, Stan W. Hyde'17, Mr. and Mrs. Joseph E. Philbrick'01, Mr. and Mrs. Ralph F. Blake'26, Miss Theresa C. Stuart, guest, Miss Abbie Buck'40, Lewis D. Nisbet'09, Edward M. Hunt'94, Herman Burgi, Jr., guest, Mr. and Mrs. Charles H. Campbell'28, William S. Richardson, 2–44, Robert R. Jordan'03, Howard H. Dole'09, Robert B. Follansbee'32, Mr. and Mrs. Edward J. Norris'31, Mr. and Mrs. Rudolph Greep'34, William S. Chandler '16, Colonel George F. Hobson'06, T. W. Estabrook'05, Philip H. Lord, Jr.,'42, Philip S. Wadsworth'24, Mr. and Mrs. Donald O. Hooper'15.

The Club is planning to hold its next meeting in the spring. – EDWARD J. NORRIS'31, *Acting Secretary*, 14 June Street, Portland, Maine.

### *M.I.T. Club of Western Pennsylvania*

In place of a regular club meeting, our second gathering of the season took the form of a dinner dance at the University Club of Pittsburgh. A total of 28 members attended, with their wives or best girls. A delicious dinner was served, after which we participated in the regular Saturday night dancing of the University Club. This affair has now become a traditional event, and is so popular that additional such evenings may be planned. It is unfortunate that your Secretary is unable to list those who attended, but it is the intention that subsequent club notes will be liberally interspersed with names for the information of old friends and classmates.

The meeting of the Club on December 7 was extremely interesting. We were addressed by Mr. Aldo Icardi who featured so prominently in the controversial wartime O.S.S. affair involving the death of Major William Holohan in Italy. Mr. Icardi spoke to our gathering two years ago and presented one of the most fascinating cloak-and-dagger tales ever heard. We shall report his comments in the next appearance of club notes. – WILLIAM M. LAIRD'43, *Secretary*, Box 242, Oakmont, Pa.

## CLASS NOTES

### • 1885 •

Erastus Worthington died in his 90th year at his home in Dedham, Mass., on October 17, 1953. Mr. Worthington graduated from M.I.T. in 1885, and when the Institute honored its 50-year Alumni in 1953, he was chosen as the representative of his Class.

For a few years after graduation Mr. Worthington was employed in a Boston office, but in 1890 he opened an independent office in Dedham. In 1898 he was married to Annie Brook Fales, also of Dedham lineage, and his entire life was spent in that city where he was closely identified with its development. Together with general engineering he made water supplies, sewerage systems, and problems of waste, his major interest. There are records of 30 towns in every state in New England, except Vermont, for which he designed water systems, and about 20 towns for which he planned sewer systems. One of his special feats was an earthen dam of great height in Rumford, Me. He was also the engineer for many of the street railways of western Norfolk County which were built about 1895, but which have all disappeared. Acting as town engineer for Dedham and nearby towns, he was also recognized as acting engineer for his part of Norfolk County, and was his home town's plumbing inspector.

Mr. Worthington was a member of the Boston Society of Civil Engineers, and was one of Dedham's first park commissioners. He also was a member of the town's planning board, the Dedham Historical Society, and the famous Society for the Apprehension of Horse Thieves. He served as treasurer of the Pomona Grange and for 59 years was the town's planning inspector. He served on many committees, always giving generously of his time and services. — ARTHUR K. HUNT, *Secretary*, Longwood Towers, Brookline 46, Mass.

## • 1886 •

To the joint Alumni of the Classes of '86 M.I.T. and '86 School of Mechanic Arts — greetings. It is a pity that the local Secretary, only eight months away from his 90th year of mundane existence, has to forego the pleasure of hearing directly from classmates and is confined to the less pleasurable duty of recording obituaries sent to him by the Alumni Secretary when the occasion requires it, which occasion he is glad does not occur more often.

In the class notes of the November Review there were published the names of those members of '86 living at the date of writing, but up to the present date, viz., November 18, the Secretary has received no word from any of them which might be used to freshen up this contribution. However, cheer up! Something *may* happen before November 18 when these class notes for the January issue are due. For the present, therefore, the local Secretary can only add a word or two of a personal nature.

My good wife and I visited Cooperstown, N.Y., last July not because we were particularly interested in our national game, but because of her interest in local history. The New York State Historical Association was holding a seminar in Cooperstown, from July 5 to 11 with daily classes on historical subjects open, at a price, to members of their association, and intended to stir up interest in local history and methods of interesting others therein. There is in Cooperstown a very complete historic exhibit of early farm implements and machinery showing the development in farming and farm life during the past 100 years or so. If any of the Class are members of a local history society, owning an ancient house or barn loaded up with specimens of early farm and domestic implements and industries, then Cooperstown is the place in which to get instruction in using and displaying your collection to the best advantage as an educational exhibit. Now go to it, '86, and show that although you are backward in communicating with your Secretary about M.I.T. matters, you may become experts in your local historical societies. You will find that a visit to Cooperstown, N. Y., could greatly assist in arousing such an interest. — ARTHUR T. CHASE, *Secretary*, Island Creek, Mass.

## • 1890 •

Frank Greenlaw writes that he "made a vacation trip to Alaska this summer and adventured into the wilds beyond the Arctic Circle." He reports the salmon pack as small, gold mining down, and no prospect of statehood at present, but "still opportunities for vigorous, ambitious young men." Only by a chance remark to a total stranger did the Secretary learn that on completing his work as chairman of the Newport Sewer and Anti-pollution Commission, Greenlaw was presented by the Mayor of Newport, R.I., with a scroll in honor of his "faithful and diligent services to the city for the last 50 years." From the Newport *Daily News*, we learned that this scroll proclaims that for 43 years he has been on the Board of Health as member or president, and it lists some of his recommendations, going back to 1913 and the garbage incinerator, sewer improvement, two new sources of water supply, restaurant inspection, dental inspection of school children, milk inspection and pasteurization. As chairman of the Sewer Commission, Frank had kept his eye on construction of a new sewer for many months, and in turning over the new $257,000 pumping station, with a capacity of eight and one-half million gallons a day, he referred to it "as the greatest step in the public sanitation system in the history of Newport."

Willis R. Whitney has added "Box 348" to his old address R.D. 1, Schenectady, N.Y. William P. Flint is back at 4535 First Avenue, North, St. Petersburg, Fla., for the winter. Sidney Horton writes from Suffield, Conn., that his "efforts are put in on the farm" and that "while the land is mostly suited to tobacco and hay," he can "keep busy keeping up farm roads, cutting marsh and improving drainage" which gives him exercise three or four hours a day. He also continues to keep in touch with the turret-lathe business with which he was formerly connected.

A letter to Harry Noyes brought a reply from his wife regretting that he could not write and now finds walking very difficult. She reports that he looks well, has good color, and his mind is clear. From her comments on his "self control" and her "restraint" (being a "born Democrat") when they discuss politics, we are certain they continue to find life decidedly worth living. — GEORGE A. PACKARD, *Secretary*, 25 Avon Street, Wakefield, Mass. FRANK M. GREENLAW, *Assistant Secretary*, 36 Bull Street, Newport, R.I.

## • 1895 •

Your secretary extends to all '95 men best wishes for the New Year. We learned recently of the passing of George Frederick Shepard on March 27, 1953, from the Alumni Association. This information prompted your Secretary to check his records of the class membership, both living and dead. There were 143 graduated with the Class in 1895. We find 43 still living, and as far as we now know, they are distributed over the states as follows: Massachusetts, 23; New York, five; California five; Pennsylvania, two; Michigan, two; and one each in the states of Connecticut, Illinois, New Hampshire, New Jersey, Rhode Island, and Virginia. Our roster still includes 24 living mates who were affiliated with the Class for terms of one to five years. Thus our total roll of living is 67. In the past, at some time or other, our Class was credited with a total of 512 names. Therefore, our living membership is 13.8 per cent of the total.

George F. Shepard, Course IV, entered Tech in 1891 and received his S.B. in 1896. After leaving the Institute he served as draughtsman with architects in Boston and New York prior to 1913, after which time he was a member of the firm of Derby, Robinson and Shepard, and finally established his own business with his own name. He planned many noted structures, and especially covered the field for schools, clubs, and many private residences. He was established at 65 Franklin Street, Boston, and his home was at 125 Canton Avenue, Milton, Mass. You will find Dr. Joseph Walworth during the winter at his Florida retreat — Lake Side Inn, Mt. Dora, Fla. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

## • 1896 •

Now that we are heading into a New England winter, those of us who fail to accept the clemency of Florida weather might look with envy at your good fortune. However, the rigors of our rock-bound coast should aid us in taking advantage of the virtues on which our forefathers prospered and waxed strong. Our apologies for the above paragraph, but lack of news from the Class forces your Secretaries to this defensive measure.

Your Secretaries had a pleasant surprise in contacting Walter H. James, Course II, while attending the '73 Club dinner at the Vendome in Boston. We learned of his retirement from his Waltham environs to Topsfield. As a member of the '73 Club, one infers that he, too, has passed the 80 mark which, from now on, will be hurdled by many of our remaining classmates. He carries on his hobbies from a workshop which he has developed in his present surroundings. We can report him as definitely active in all interests, and could not be considered an old man on any slide rule computation. We remonstrated with him for missing our various anniversaries, but he promised to mend his ways and keep in touch with us from now on.

We regret very much to report that Winthrop H. Chenery, Course IV of Burbank, Calif., died on October 18. Further details are not available at this writing. — JOHN A. ROCKWELL, *Secretary*, 24 Garden

Street, Cambridge 38, Mass. FREDERICK W. DAMON, *Assistant Secretary*, Commander Hotel, Cambridge 38, Mass.

## • 1897 •

Supplementing our brief advices in the December Review of the death of Rear Admiral A. L. Parsons, U.S.N., retired, we have been able to obtain the following additional facts concerning his engineering activities. In 1903 he was working as an inspector on the construction of the new Government Printing Office in Washington. Later in 1903 he was commissioned lieutenant, junior grade, in the Civil Engineer Corps. As a Public Works Officer who represents the chief of the Bureau of Yards and Docks at the various Navy Yards, he was at times stationed at New York, Haiti, Hawaii, Philippines, and so on. Later he became assistant chief of the Bureau of Yards and Docks and from 1929 until 1933 served as chief, retiring in 1938 with the rank of rear admiral. The Bureau of Yards and Docks is that part of the Navy that designs, constructs and maintains all the buildings, power plants, drydocks, marine railways, sewers, water systems, and so on, at the various Navy yards throughout the world. The chief is appointed by the President. Admiral Parsons won the Navy Cross in World War I. On retirement he became vice-president of the Frederic R. Harris Company of New York and was consultant on the design, development and construction of the advance base floating dry dock built by the Navy during World War II, often called the Navy's secret weapon in the Pacific Theatre. He was a life member of the American Society of Civil Engineers. He leaves one daughter. Interment was in the Arlington National Cemetery in Washington.

We have received a copy of the Report for 1953 on the Alumni Fund and are pleased to note that of a total of $213,-100.11, the Class contributed $2,645.00, 31 per cent, or 32 of the Class contributing, and the average contributed was $82.80, which ranks as the second highest amount. The total amount contributed by the Class since 1940 is $55,950.61. We are one of the five Classes who have topped $50,000. All of this is very gratifying and great credit is due Henry E. Worcester, our Class Agent, in charge of contributions.

Than Howard has just advised the Secretary of the advent of his second great-grandchild, a girl, and we offer our congratulations to all concerned. Yes, we must be getting along in years to make such happenings as these possible. Well! what are we going to do about it? — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass.

## • 1898 •

We will interrupt the story of the 55th reunion for two reasons. First, it is necessary to check some of the data of the day at the Country Club; and, secondly, because there are certain facts, doings and otherwise, of the Class, which are of interest, but if not duly reported will soon become obsolete.

Our worthy President, Daniel W. Edgerly, made a trip to the Orient last spring, concerning which he furnished an interesting write-up at the time of the 55th. This reunion was so replete with pleasurable events and activity, that it was not possible to spring all the novel features that Lester and Dan and George had prepared in advance. So here is Dan's own story of his trip, written as of April 1, 1953.

"Orient Trip. Forty days in a steamer chair a little too long — but a new experience and most interesting — strange countries and people. About 200 passengers of which 50 made the round trip. Hawaii: The best Chamber of Commerce propaganda of any spot on earth. Every one who reads it must go there! There one day going, one day returning. Had a friend, Commander in Navy, who took me everywhere — so a very good once-over. Manila: Two days — not particularly interesting — drove out 50 miles into the country to Lake Taal which is quite a sight. Not impressed with farming. Ploughing with a caribou with an ancient Egyptian plow (digs down and under). They had a new three-million-dollar exposition which was quite a feature in the evening. Hong Kong: two days — one of the high spots. Two million people, 98 per cent Chinese. Oh, those Chinese girls with double slashed skirts — three to four inches above knees. Still have a little eye strain left. The Kowloon side was more interesting than Victoria on Hong Kong Island. Rode all over Hong Kong Island, and back 25 miles on the Asia side (up to within 10 miles where the Red Commies had their territory). Japan: Left ship at Kobe for three days' trip to Tokio (about 400 miles). Kyoto a most interesting place — the ancient capitol for some hundreds of years up to 1858 when moved to Tokio. The Japs are industrious (same as Chinese) and I had a good opportunity to see them at close range. Over 70 million people in area about size of California, with only 1/6 of land available for cultivation. They are not colonizers and apparently are satisfied to continue living as they always have done. However, a lot of manufacturing plants — so if they cannot sell to United States and Europe, they will to the Chinese. They are really great ship builders and going ahead with that. Taxes continue high. For 15 years before War II taxes went into battleships and army. Now for peaceful purposes so they will be 'busting out all over' in a short time. Tokio interesting in its main part, but one day's sightseeing would cover that. Saw no remains of war damage — has been all rebuilt.

"High Spots: Sailing from Kowtoon at 10.00 P.M. — Victoria with a band of lights at sea-level — with rows of lights (I counted 25 rows) going up 1,000 feet for about three to four miles — quite a stage setting. Coming into Tokio by train in the morning, saw Fuji for four hours. It looked about 25 miles away but was 70 miles. Only 37 per cent or less of the time is Fuji visible from this distance. (Couldn't find a post card picture of Fuji!) From San Francisco to Hong Kong — retarded clock one hour eight times — also advanced clock eight times returning. This was 40 per cent of the time in the ship. So once in a while, some guess work whether one was one hour early or late for breakfast. Also missed one day going — and had two same days returning. Haven't puzzled that out as yet.

"Asia War Front — Manchuria to Singapore not counting Red Chinese. Korea: 500,000 U.N., 400,000 Koreans; Japan: 180,000 Japs, 75,000 U.S.; Okinawa: 20,-000 U.S.; Formosa: 500,000 Chinese; Hong Kong 10,000 Br.; Philippines: 57,-000 Ph., 12,000 U.S.; Indo-China: 235,-000 Fr., 210,000 Native; Malaya: 42,000 Br., 60,000 Native; grand total 2,300,000. Estimate Korea — 75 per cent U.S. equals 350,000 — so roughly about 500,000 U.S. soldiers. U.S. now top nation in World (succeeding Rome, Spain, British). So it looks like U.S. soldiers from now on somewhere. Also, a yearly draft of about one million boys for some time. Haven't seen this mentioned in papers but only a couple of times. Interesting to watch!"

Classmates will be interested in the following professional card: "Robert Starr Allyn and Nelson J. Edge announce the formation of a partnership for the practice of law specializing in patent trademark and copyright matters under the firm name of Allyn and Edge, 92 Liberty Street, New York 6, N.Y. Cortlandt 7-9796." All good success to the new partnership!

Our former Secretary, Arthur Blanchard, left for Florida about the middle of October. From Mrs. Blanchard, the Secretary's sister has received a card, an attractive picture of the dining room at the Lake Shore Plantation Inn, Lake Wales, Fla., with the following message: "Safely down in Florida, Arthur stood the trip well and is happy to be here. Mocking birds sing all day. Hope we may see you and Edward here this winter." This is indeed good news, as our esteemed classmate has had quite a tough time of it since the 55th reunion, and we are glad to learn that he is safely back in his much beloved and healthful Florida environment.

Another classmate has passed within the Unseen Temple: George W. Adams, on October 22. We received the notice from the Alumni Association, but as yet have no further details.

Our honorary member, Dean George R. Harrison, is much in the news today. The National Academy of Sciences held its autumn 1953 meeting at M.I.T. and we quote from the Boston *Herald* of November 10: "Sun, Rather Than Atom, Seen Chief Energy Source in Future. Use of the sun's energy 'may beat out atomic energy as the prime mover of the future world,' a Massachusetts Institute of Technology scientist said last night. Dean George R. Harrison of the M.I.T. School of Science, addressing a session of the annual meeting of the National Academy of Sciences at M.I.T., declared: 'The path among Nature's obstacles to solar energy utilization is devious but we have no evidence that there is no such path, and have come so close to breaking through in several directions that the search is exciting.' Dean Harrison pointed out that 'any 16-mile square area in the Arizona desert receives enough energy as sunshine to satisfy all of the current energy needs of the American people.' However, he said, 'most of this passes wastefully through our fingers, and we draw from our limited energy reserves for most of our needs.' Solar

energy may be more valuable to man in the long run than atomic energy, he said, because, 'our visible supplies of uranium and thorium atoms are limited, and we seem likely to need most of them for the uses which require concentrated power. To equal the coal consumption of the United States alone, 30,000 tons of uranium would be needed annually at the present efficiency of utilization.'"

The New York *Times* of Sunday, November 15, comments further: "In the course of a public lecture on the utilization of solar energy delivered during the autumn meeting of the National Academy of Sciences, Dr. George R. Harrison of the Massachusetts Institute of Technology called attention to a solar-operated stove placed on the market by the government of India at a cost of $14. The stove has a mirror about a yard square to concentrate energy on a pressure cooker. The cook watches the pot, to be sure, but only once every 20 minutes, and then to move the mirror so as to focus the rays of the sun where they are wanted. The price of the stove is high for a peasant, but the government thinks that a stove will pay for itself because the cow dung, now used as fuel, can be turned into the soil. Dr. Harrison also referred to flatplate heat collectors favored by a group of M.I.T. engineers headed by Dr. H. C. Hottel. Sunlight falls on blackened metal absorbers, which are tilted at the best average angle and insulated to minimize heat losses. Water circulates under the collector to absorb heat and carry it to the point of utilization. Such collectors can heat water for domestic use, warm houses and run low-pressure steam engines."

The 55th reunion brought out a flock of new addresses: Robert S. Allyn, 428 Grand Avenue, Brooklyn, N.Y.; Roger W. Babson, 250 Cliff Road, Wellesley Hills 82, Mass.; David H. Blossom, P.O. Box 1032, Anna Maria, Fla.; George H. Booth, 243 Roswell Avenue, Long Beach 3, Calif.; George H. Breed, 922 Third Avenue, New York 22, N.Y.; Maurice F. Delano, Apt. 1A, 26 Hannum Drive, Ardmore, Pa.; Edward T. Foulkes, 421 15th Street, Oakland 12 Calif.; Fred C. Gilbert, Lazy P Ranch, Wildomar, Calif., Mrs. Pliny B. Morrill, 65 Clyde Street, Newtonville 60, Mass.; Benson B Priest, 215 Eldred Street, Williamsport, Pa.; James W. Shook, P. O. Box 2631, 1841 First Avenue, West Birmingham, Ala.; Edward M. Taylor, Hotel Du Pont, Wilmington, Del.; Atherton H. Tucker, 137 Main Street, Andover, Mass.; Ralph E. Wilder, 1411 Park Street, Syracuse 8, N.Y. — EDWARD S. CHAPIN, *Secretary*, 463 Commercial Street, Boston 13, Mass. ELLIOT R. BARKER, *Assistant Secretary*, 20 Lombard Road, Arlington 74, Mass.

## • 1899 •

Last month your attention was called to the fact that in June, 1954, our Class will hold its 55th reunion. At our 50th reunion there were 181 names on the class roll while at the time these notes are written (November 13, 1953), there are 139 — a loss of 42 of our classmates. Possibly these figures may intimate to you that it may be later than you think. You are now all in your late seventies. Why not plan now to attend the 55th reunion in June, 1954? You will not only have a chance to renew your old friendships with members of your Class, but an opportunity to see the enormous advancements M.I.T. has made in technological education, which has kept it in the vanguard of all such institutes. Can you take any other trip that will give you more personal satisfaction? — BURT R. RICKARDS, *Secretary*, 381 State Street, Albany, N.Y. MILES S. RICHMOND, *Assistant Secretary*, 201 Devonshire Street, Boston, Mass.

## • 1900 •

In the November Review we noted briefly the death of Fred Southworth. He was a native of Stoughton, Mass., and graduated from M.I.T. in 1900 from the Architectural Course. After graduation he worked as architectural draftsman in Boston until 1904 when he joined a staff of architects designing buildings at the Naval Academy. He was employed by the Navy Bureau of Yards and Docks in 1907 and remained with them until 1944 when he retired as chief engineer and architect of the Bureau.

In 1918 he joined the Civil Engineering Corps of the Naval Reserve as lieutenant commander and was made commander the following year. He was project manager, Hospital Section, Bureau Yards and Docks, in charge of design and supervision of the construction of all naval hospitals and allied building work in the United States, its possessions and overseas. Despite his retirement eight years ago, he served as consultant on plans for enlarging the Naval Academy and on design of government hospitals for Colombia, South America. Fred had lived in the District of Columbia since 1906. A bachelor, he resided in the University Club. He was a member of the American Institute of Architecture, the Association of Federal Architects and the Washington Arts Club. He died at the home of his sister, Mrs. Winthrop Southworth, at Needham, Mass. He is also survived by a nephew, Winthrop M. Southworth, Jr., of Chevy Chase, Md.

Another graduate of our Class from Course IV, John Vanderveer Beekman, Jr., died on October 28, 1953. A native of Brooklyn, N.Y., he was living in Plainfield, N.J., when he entered M.I.T. After a year as draftsman with Edison Portland Cement Company, John became Boston manager for Purdy and Henderson, Civil Engineers, in 1901. In 1908 he joined the Whidden Company as manager, and in 1915 the Whidden-Beelmen Company, Builders, was formed with John as president. He retired in 1925, perhaps the first of our Class to retire. He lived for many years in Chestnut Hill moving to West Newton a few years ago and making his headquarters at the Brae Burn Club. He married Susan Warrem Hill of Cambridge in 1900, but they had no children. He will be remembered by many as having celebrated his 50th birthday at our 25th reunion at East Bay Lodge.

We also note the death on October 27, 1953, of Russell Suter, Course I. After graduating in 1900 he worked in the City Engineer's office in Cambridge and was with the Water and Sewerage Board in Boston. In 1903 he joined the civil government in the Philippines as supervisor of the Provinces of Surigao and Canite in 1903 and as assistant engineer, Bureau of Engineering, in Manila in 1904, and in Cebu in 1905. In 1906 he joined the Board of Water Supply of New York City as assistant designing engineer. He remained with them until 1910 when he joined the State of New York Water Supply and Conservation Commissions. Since then he has been in Albany, N.Y., in various capacities in Water Supply, Water Power and Conservation work, and was secretary of the Water Power and Control Commissions since 1919. Russell served as captain of engineers of the A.E.F., in the first World War, principally as water supply officer at Nevers, Paris and Tours. — ELBERT G. ALLEN, *Secretary*, 11 Richfield Road, West Newton, Mass.

## • 1901 •

It is with regret that I have to report more sad news. Two more of our classmates have passed away: George Marsh and Jim Monaghan. George Marsh died suddenly on October 16. I wrote a letter expressing the sympathy of the Class to Mrs. Marsh. She replied thanking me and enclosed a Washington, D.C., newspaper clipping from which I quote: "George E. Marsh, 76, retired electrical engineer for the Veterans' Administration, was born in Georgetown, Colo. He went to M.I.T. and the University of Chicago. He was formerly professor of engineering at Case School of Applied Science, Ames Agricultural College and Armour Institute. He had lived in Washington since 1928. He was a member of the American Institute of Electrical Engineers, American Electro-Chemical Society, Washington Philatelic Society, Washington Society of M.I.T., Sigma Xi and the Mineralogical Society. He is survived by his widow, Rosemary L. Marsh."

I quote from newspaper clippings concerning the death of Jim Monaghan. "Col. James F. Monaghan, a well-known architect and engineer and a veteran of World War I, died on September 17 at a nursing home in Lowell after a long illness. Col. Monaghan, who was in his seventies, lived in Waltham before moving to Lowell two years ago. He was born in Waltham and first moved to Lowell at an early age. He graduated from the Lowell High School, where he was colonel of the Lowell High School regiment. Later he graduated from M.I.T. For many years he was superintendent of the Waltham Bleachery. During World War I, Col. Monaghan was an interpreter and later served on the Peace Commission in Paris, appraising damages to textile mills. Shortly after World War I, he was named commander of the Waltham Post of the American Legion. He was a former member of the Engineers Club in Boston. As an architect he was instrumental in designing and building St. Charles Church in Lowell. He is survived by his wife, the former Rita McMahon of Lowell, a niece and several cousins."

A few more 1953 class letter replies. From Ralph Robinson in Florida: "I retired in May '45 and moved to Florida two years ago. Fort Lauderdale is a beautiful

city and we love it here. I raise enough vegetables in my little 20'x30' garden to supply us all winter with fresh vegetables. I take care of my own yard and have beautiful shrubs, flowers, lawn and tropical trees. My wife and I play 18 holes of golf three times a week and my average score since the first of the year is 85. I am honorary secretary for M.I.T. and represent them here in two counties. I interview from 25 to 30 prospective students per year. I am vice-president of the Miami M.I.T. alumni group. We generally travel north for three months each summer, although it was cooler here last summer than in Schenectady, N.Y. I have four grandchildren in Schenectady and three in Paris, France."

Harry E. Dart retired on March 1, 1953. Edwin Church says: "Retired in '46. Moved from Brooklyn to Elmira, N.Y., my birth place. Bought a small house and live with my wife and her sister. No especial hobby except flower gardening and traveling around the country." Frederick Ayers in Detroit says: "Still on the job working every day. Hope to be able to attend the 55th class reunion. I certainly enjoyed the 50th, especially seeing my old Naval Architect friends."

Since the class letter goes out in February, there will be no notes in The Review for that month. — THEODORE H. TAFT, *Secretary*, Box 124, East Jaffrey, N.H. WILLARD W. DOW, *Assistant Secretary*, 287 Oakland Street, Wellesley Hills 82, Mass.

## • 1903 •

Your Assistant Secretary apologizes because there were no notes in the December issue of The Review. He was so busy on a number of things that the due date, October 19, got by him. It was not because he had nothing to say. We hope you enjoyed the November issue with its picture of the class reunion, and also the July issue with its glimpses of some of us. Since then, notices of the deaths of two members have been received. Stephen R. Bartlett died on August 29, after a long illness at his daughter's home in Westport, Conn. After graduating from Yale in 1900, he came to the Institute and graduated with us. During his engineering career he was with Lockwood, Green and Company, and Walworth English Flett; and during World War II, he was with the U.S. Chemical Warfare Department, inspecting plans and specifications. He retired in 1945. For 37 years he lived in Hingham, Mass. Upon the death of his wife, the former Alice Julia Farnham, in 1951, he moved to Westport to live with his daughter, Miss Elizabeth M. Bartlett, to whom we are indebted for the above information. He left a son and two grandchildren.

Frank C. Reed died in Grove City, Pa., on September 17. He was a retired vice-president of Westinghouse Electric Corporation, the company he worked for after graduation from the Institute. In 1921, he was put in charge of the Charleston and Bluefield, West Virginia offices. Six years later he went to Chicago as general sales manager of the Westinghouse Electric Elevator Company, now a division of the parent company. In 1931, he became vice-president of the elevator company. He retired in 1945, after a career in which he directed installation of Westinghouse elevators in many of the nation's skyscrapers, including the fleet of 120 elevators in New York's Rockefeller Centre.

A card from Hewitt Crosby mailed in Palo Alto, Calif., states that he and Mrs. Crosby are leaving there November 2, and are going to Sarasota, Fla., where they expect to be this winter. — FREDERICK A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, Box 103, South Wellfleet, Mass.

## • 1904 •

Dear classmates, or whomsoever it may concern, those two wonderful fellows Carle Hayward and Gene Russell who have so nobly filled the gap in 1904 class news have raised their hands toward heaven and let them fall in three distinct motions saying "Alas, there is no news for the January issue. Let us call on Steve for help. He has been useless for a long time but perhaps he can produce something, we hope." So I shall endeavor to produce. What it may turn out to be is not apparent to me now, but we shall see what we shall see.

It may be somewhat historical in spots, but certainly will not be in any way prognostical as to future events, except with regard to the coming 50th anniversary. To begin with, I am still Secretary of the Class of 1904 by virtue of being elected Secretary for life at a wild and wooly reunion at Straitsmouth Inn in 1916. Of course I accepted the position. What else could I do? The election was over and there would probably never be another. Well, you can see from the fact that I am writing this column, I must be still alive and, ergo, I am still your Secretary, although I am frank to admit that for the past 10 years, you have seen very little to prove it. However, Gus Munster, Ed Parker, Dwight Fellows, Farnum Rockwood (Tammy, if you didn't know the Farnum), Harry Kendall, and George Curtis can bear out my statement that I am alive.

So there may be some among my readers who will say "Where has he been?" So I will tell you. Ten years ago, I suffered a severe nervous and mental upset, which entirely incapacitated me for any active participation in the usual activities of life and sent me through a succession of sanatoriums until I landed here in Stow about five years ago, where I began to emerge from the fog in which I was enclosed. This began a couple of years ago and the improvement has continued until I am again able to take an interest in things and get about a bit and sincerely hope to make the big event next June. Gene and Carle tell me that as far as they can see the classmates seem to think that all the writing has to be done by their Secretary and not to him. They have not changed any in that respect since I was active in the secretarial post. Let me ask you fellows, "How do you think a secretary can get news of his classmates if no one writes any to him." The answer is "He doesn't get any," unless he runs across some item in the "Bingville Bugle," the "Tonawanda Trumpet" or the "Boston Bass Drum." These words are intended to arouse classmates to the point of writing a letter to the Secretary, any one of the three (see names at end). We read of the "millennium" which seems to be a state of bliss, great happiness and greatly to be desired. So if we should get a letter or two as a result of this effort, we would probably feel that the millennium had arrived. But, fellows put yourselves in our places, have a heart and drop us a line or two won't you? Or don't you like to read about your classmates? I certainly do.

So far there has been little or no mention of the 50th anniversary coming next June. Of course, we are unable now to give you any details about it. You have had some letters, descriptions of the Oyster Harbors Club, and so on, from Carle and Gene. You know that so far over one hundred men and wives have signified their "hope" to be present. Their few words are intended to strengthen that "hope."

We began to hold annual so-called reunions in 1919 and we ran them until 1941; I think without a lapse. I ought to know because I ran them. Did you ever attend one? If you did, you know what they were like. The first one I missed was the 45th in 1950; Gus Munster and Freeman Cobb ("Cecil" for us who saw him at the reunion) came all the way to Stow from East Bay Lodge to tell me about it. And what they told me about what went on, and who was there made me all the more regretful that I was absent. When I looked over the list of "hopers" for next June I became more desirous than ever of being there. There was not a name I did not remember, and I have a mental image of each as he looked 50 years ago. Of course, I know that when I see them next June I may not recognize some of them because we no longer look like what we did in those days on Boylston Street. But I tell you, fellows, it is great to meet the old gang again. If you never have attended a class reunion, next June is the time to come. You will find it a great experience to meet the old fellows and talk over the old days. And remember this. There will not be many more of these reunions, so now is the time to "Enjoy yourself — it's later than you think."

That's about all for this time. It has been good to talk with you all again. The best thing of all will be that get-together next June when we can really talk.

They say there is nothing certain but death and taxes and we have all had our period with taxes. So let's firmly resolve to make those "hopes" come true and have a 50th anniversary that we can remember "till time shall be no more."

So long for now, but I'll be seeing you. — *Acting Secretaries*: HENRY W. STEVENS, Whitney Homestead, Stow, Mass.; CARLE R. HAYWARD, Room 35-304, Cambridge 39, Mass.; EUGENE H. RUSSELL, JR., 82 Devonshire Street, Boston 9, Mass.

## • 1905 •

I am in receipt of full page copy with several illustrations from a September issue of the Manchester, N.H., *News* concerning our old classmate, Harry Atwood.

I am trying to contact him to get his permission to use certain sections in a later issue. This much is certainly interesting: "His troubles started early in life. His teachers considered him a poor student. He had trouble later when he entered M.I.T., and disagreed with his professors that the atom could be taken apart. A quarter of a century ago, before the public heard about atomic energy, Atwood told newspapermen that exploding atoms was a definite possibility. Today he gave some reassuring advice to the people who worry about 'chain reaction' from a hydrogen bomb destroying the earth. 'Nitrogen atoms are a safety valve against such a disaster,' he asserted. 'We have so many nitrogen atoms that they insulate the hydrogen atoms and are always on hand to break any chain of explosions among the hydrogen atoms.'

"In 1911 he piloted his airplane to what was then the unbelievable altitude of 7,000 feet. The story of Atwood in the field of science would lend itself to a book under some such title, 'The Story of Harry Atwood, Scientist Extraordinary.' He showed newspapermen this week a contract with a large and reputable Southern plastic manufacturer which promises him $160,000 in royalties on his new bacteria-killing liquid purifier. This device, he says, could be applied to a city water system so that chlorine will not be necessary and 'people can drink pure water instead of water diluted with an antiseptic.' He said the invention would open up vast new supplies of water for both city and country population. It also frees milk and other liquids of harmful bacteria. The water purifier, a simple process of 'ionizing' germs electrically in such a way that they die immediately, could be adapted to innumerable uses, Atwood asserts.

"Atwood appears beyond any doubt whatever to have been the first man to find a successful answer to the problems of impregnating strips of veneer or plywood with synthetic plastics so as to create structural material strong enough to stand the stresses of flight. At Milford he built – and at Nashua, Clarence Chamberlin successfully test-flew – such a plane. It was briefly the sensation of the aeronautical world. After Atwood left New Hampshire he was associated with a large lumber company in Wisconsin for a while, then, early in World War II went to Vancouver, B.C., as a consultant to companies manufacturing aircraft for the Canadian government. They adopted many of his methods of construction. In 1944, 11 years after Chamberlin flew Atwood's plastic plane at Nashua, an American newspaperman who had witnessed that flight was given a ride in a British Royal Air Force *Mosquito* bomber. The newspaperman remarked that this bomber – believed by many airmen the greatest plane of the war – was virtually identical in construction to the Atwood New Hampshire plane. The British turned these planes out for a small fraction of the cost of an American *B-17*, but the *Mosquito* flew almost twice as fast as the *B-17*, had a similar range, carried a similar bombload, and needed only half as many crew members.

"From Vancouver Atwood pushed south to New Orleans, where he became a top consultant to Andrew Higgins, the great wartime boat builder, whose plywood 'Higgins Boats' and torpedo boats proved 'naturals' for the application of Atwood's plastic engineering. In those days Atwood rode high. Nationally famed syndicate columnists studied his laboratory and reported on his genius. The inventor journeyed to Washington with Higgins and parleyed with men high in the conduct of the war, like Admiral Lahey, and Air General Hap Arnold, with whom Harry had learned to fly under Wilbur and Orville Wright in Dayton, Ohio, back in 1908. Atwood expounded to the country's top scientists and generals on his theories of space flight, flying saucers, atomic energy, jet propulsion. Years earlier, in his mountain laboratory in Greenfield, N.H., he had talked similarly to visiting college professors and research scientists. There is indisputable evidence that Atwood preached jet propulsion 20 years before the Germans 'invented' it.

"His 'flying saucer' scare broke into headlines all over the country. There were suspicions in Washington that Atwood was behind the strange aircraft. Government Intelligence men came to New Hampshire and tried to track him down. Meanwhile he was holed up in a remote and lonely laboratory in Arkansas. He now denies he had anything to do with any actual flying saucers, but he says the principle is sound. 'All you need,' he says, 'is a flat, circular, revolving wing structure, and something to push it along through the air, such as jet propulsion. A circular revolving wing would be the perfect airplane wing. If you want to see what I mean, just go to any open window and scale a phonograph record into the air. It flies like a bird.' Then as now, Atwood preached the idea of space flight. He spoke of the need to build 'satellite' platforms which could be anchored out in space, or move freely about at will, enabling the possessors to keep constant check on enemy nations. In the old days folks laughed and tapped their heads when Atwood got on this line, but in recent years there have been press reports from the Pentagon, indicating the military are seriously attempting to produce such bizarre 'space platforms.'"

Bob McLean is carrying on passionately and successfully as our Class Agent. The latest issue of the report on the Fund shows the results of his good work. The last time I saw Bob he was hoping that the percentage of givers might be increased, meaning that he hopes that you, if you have not already done so, will help him and the class record by sending in your contributions.

It is my sad duty to report the death of Walter G. Bent, X, on October 23, 1953. Walter passed away at his home at Old Lyme, Conn., to which he and Mrs. Bent retired after being retired by Eastman Kodak from his service in London, England. Details are lacking but will probably be available for the next issue.

Note change of address: Alfred H. Kelling, V, from San Antonio, Texas, to 6904 Strathmore Road, Chevy Chase, Md. Bill Spalding's address is now W. L. Spalding, 27660 Haggerty Road, Farmington, Md. – FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston, Mass.

## • 1906 •

We have previously had occasion in this column to refer to Dr. James H. Means of Boston who spent his freshman year with us and then transferred to Harvard to get his A.B. degree and study medicine. *Time* magazine for November 16 in the Department of Medicine devotes several paragraphs to Dr. Means under the title "Reform from Without?" Dr. Means served for 36 years on the medical faculty at Harvard, 28 years as chief of the medical services at Massachusetts General Hospital and now is on the medical staff at M.I.T.

"As the spokesman for organized medicine, the A.M.A. holds that changes on the medical scene should be made by doctors, and laymen had best keep hands off. This week a vigorous dissent comes from a ruggedly individualistic Yankee doctor with a brilliant record of medical achievement. Says Boston's Dr. James Howard Means in *Doctors, People and Government* (Little, Brown; $3.50): 'The impulse to reform in medical public affairs comes usually from without, and resistance to it from within the majority fold of organized medicine. . . . It is only under the lash of public opinion that organized medicine makes any social progress.'

"Is there need for change? Emphatically yes, says Dr. Means. Though U.S. medicine is often touted as the best in the world, he asks, 'Best for whom? Doctors, patients, or everybody? Certainly it is not best for everybody, else the public affairs of medicine would not have been in turmoil for the past two decades.'

"Dr. Means insists that he is as much opposed to socialized medicine as is the A.M.A. itself (from which he resigned in protest against its assessments to finance lobbying and pressagentry against the Truman national health plan). But, he believes, the danger that government may take over all medicine increases the longer a nation waits for a solution to the problem of making the best medical care available to all its citizens, and finding ways for them to pay for it. Dr. Means holds that the clearest threat of socialized medicine in the U.S. lies in 'the colossal medical activities' of the Veterans Administration. 'If we have anything that amounts to socialized medicine' he writes, 'the veterans' medical services are it! . . . It would be an ironic turn of fate if the U.S. should find itself in the same situation (as Britain) by default – by unwittingly letting the V.A. empire take over!'

"What to do? First, the Federal Government must put its chaotic medical house in order by adopting the consolidation plans of the commission headed by ex-President Hoover (which ex-President Truman also supported). At the same time, voluntary agencies seeking to improve the nation's health must organize effectively in a nationwide council. Dr. Means makes these recommendations: Medical care should be prepaid on an insurance basis – 'payment . . . on a fee-for-service-as-rendered basis is outmoded.' Doctors should practice in groups and be paid straight salaries, or salaries plus a share of group earnings. The Federal Governmnt should make grants-in-aid to local bodies, which would have to

match these grants in setting up improved medical facilities. Each university hospital should become the center of a web of medical facilities, including a prepayment plan, a home-care plan and group practice, and should also serve smaller, satellite hospitals in a big-brother capacity."

The Secretary received a letter from Terrell Bartlett under date of November 1. Without being too personal in this column, classmates will recall we devoted some space previously to a trip to San Antonio taken by Frank Benham and the Secretary. Terrell's letter of November 1 invited Frank and the Secretary and his wife to make another visit to San Antonio to see some of the things which time did not permit on the first visit. It is very gratifying to feel that we did not wear out our welcome the first time and due consideration will be given to this invitation. Terrell's letter contained a reference to Eddy Frank's death which was reported in the July Review, and also enclosed a letter of August 27 from Mrs. Frank to Terrell which I know will be of interest to classmates: "I am so sorry to be so late in sending you news of Edwin's death. Although his doctor had warned him to go slow, because of a heart condition, he had been very well this last year and more interested than ever in his engineering work. He had promised me faithfully to retire on his 70th birthday, July 27. On April 28 he was up early, as usual, glanced at the newspaper and joked about the usual 'censored news' as he handed it to me. He stepped into his bathroom but came back a few moments later saying 'I don't feel well,' slipped back into his bed and closed his eyes. I know I must be grateful for such a peaceful ending, but it is so hard to lose all one loved and the wonderful companionship I cherished, from one moment to the next. Among Edwin's letters I found several from you and so felt I did want to send you a few lines; also, to tell you how badly he felt not to have been able to welcome you here last summer. It worried him a great deal, but I assured him that you understood. We had planned a trip to Mexico and the West this fall and were counting on seeing you and Mrs. Bartlett on the way. Sincerely, Marie Frank."

Terrell recalls that Frank was one of the Class who roomed at the Tech Chambers and fed at Mrs. Embury's on St. Botolph Street, although he seems to be a little hazy about the location of the eating place. — JAMES W. KIDDER, *Secretary,* 215 Crosby Street, Arlington 74, Mass. EDWARD B. ROWE, *Assistant Secretary,* 11 Cushing Road, Wellesley Hills 82, Mass.

## • 1907 •

Ray E. Shedd, who graduated with us in the Course in Civil Engineering and who lives at 73 West Chestnut Street, Wakefield, Mass., was retired on October 30 from the Department of Public Works of the Commonwealth of Massachusetts, where he has been in charge of the layout division since 1920. Ever since 1907 he has been in the state service and has been associated with the planning of many of the state's most important roads and bridges.

I quote from a story in the Boston Sunday *Herald* of October 25, 1953: "Something radically new in design, solving one of the basic problems of the modern hotel, has won for one of Boston's top architectural firms the contract to build the new Sheraton Hotel at the Penn Center development in Philadelphia and a new hotel in New Haven. The appointment of the firm of Perry, Shaw, Hepburn, Kehoe and Dean, of Boston, was announced on October 24 by Ernest Henderson, president of the Sheraton Corporation of America. The plans for the 1000-room Philadelphia hotel and the New Haven edifice will be drawn jointly by the Boston architects and the Sheraton's own architectural department. Henderson said that several firms were under consideration for the jobs, but the new design suggested by Perry, Shaw, Hepburn, Kehoe and Dean — still top secret — won the firm the contract. The new idea will not be disclosed until plans to start construction have been completed, Henderson said. The Penn Center Sheraton will feature a 1400-seat ballroom, outfitted with the latest in air conditioning, lighting and a stage as modern as any on Broadway. Garden suites, fronting on a garden terrace surrounding the hotel, luxury penthouses and medium-priced rooms and suites will be other features of the hotel.

"The Boston firm is noted for its outstanding architectural work throughout the country. These include the restoration of old Williamsburg at the request of John D. Rockefeller in 1926. Other projects included the Jordan Marsh Company's new store in Boston, the Quadrangle at Brown University, Providence; the Providence Washington Insurance Company building in Providence, and the Alfred Sloan Metals Processing Laboratory at Massachusetts Institute of Technology. Two of their most recent jobs were the completion of the Cambridge military cemetery in Cambridge, England, and the Air Force Climatic Research Laboratory on the summit of Mount Washington in New Hampshire." William G. Perry of our Class is one of the members of this architectural firm.

If you have not already made your contribution to the M.I.T. Alumni Fund for the current year, won't you send along your check now while the subject is again brought to your attention? — BRYANT NICHOLS, *Secretary,* 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary,* 18 Summit Street, Whitinsville, Mass.

## • 1909 •

Preparations are now well under way for our 45th reunion. On Monday, November 9, Frank Loud, VI, Chairman of the Reunion Committee, called a luncheon meeting of the Committee at the University Club in Boston. In addition to the committee members, Frank and George Wallis, II, there were present Henry Spencer, II, and Art Shaw, I, the Committee who arranged the 40th so effectively, and the Class Secretary. Harry Whitaker, VI, the third member of the Committee representing the New York area was in New Jersey, and did not attempt to come, but Frank has informed him of the opinions expressed at the meeting. Several locations for the reunion were considered, ranging from those along the Connecticut shore clear out to the Cape at Chatham. The New Ocean House at Swampscott, Mass., and the Wentworth-by-the-Sea at Newcastle, N.H., were also suggested. However, a resort south of Boston was favored because of the greater convenience to those coming from the New York area, as well as from the south and southwest. Suggestions from class members will be welcomed by the Committee, although because of the lapse of time between the closing date of these notes and the issue of this Review, the resort may already have been selected. Since Alumni Day is Monday, June 14, the reunion date has been set for Saturday, June 12, although, as usual, Friday will also be reserved as the day of arrival for most of us. Keep these dates open and start making plans to attend as well as talking up the event to those '09 men whom you may meet.

We have received two news items involving Tom Desmond, I. He is the author of an article entitled "Health and Welfare Service for the Aged," in the October, 1953, issue of the magazine of the American Medical Association, *Today's Health.* Molly, IX, sent us a clipping taken from the New York *Herald Tribune* of October 12, 1953, and written by a "Constant Reader" who stressed that Tom would make an excellent lieutenant governor for the state of New York and highly recommended him as a candidate. The letter states, "He is able and is respected by labor . . . is very active, and has always thought of those over 40 . . . especially the white-collar workers." Tom as lieutenant governor of New York certainly would add to the prestige of the office and we are all for him.

C. H. Lovejoy'10, sent us the following clipping asking if this could be the Assistant Secretary of 1909. It surely is, as well as a past Class President and present Vice-president. "To the New York *Herald Tribune*: You are right in stating in your editorial on the Manhattan Classified Telephone Directory in your issue of November 3 that the telephone directory is 'surely worth browsing through.' But you are wrong in stating earlier in your editorial that 'no one reads it for sheer pleasure.' I have been reading telephone directories for interest and entertainment for at least 25 years. I have never been able to recapture the thrill of my initial discovery in the Pittsburgh Telephone Directory for July, 1928, of 'E Manytail-feathers, beauty parlor on Kirkwood Street in East Liberty.' I have found much pleasure and entertainment in my telephone directory reading and never give up hope of an equally exciting discovery. Maurice R. Scharff." — CHESTER L. DAWES, *Secretary,* Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries:* HARVEY S. PARDEE, 549 West Washington Street, Chicago 6, Ill.; MAURICE R. SCHARFF, 366 Madison Avenue, New York, N.Y.; GEORGE E. WALLACE, Wenham, Mass.

## • 1910 •

News from various classmates has been very meager for the past two months, and

what news I have received is from the local members of the Class.

I had a letter from Cliff Hield a week or so ago, and he said he had had no vacation this year and probably didn't need one as he now has 14 acres for recreation. I understand Cliff has built a very nice place in the suburbs of Minneapolis. Dud Clapp and his wife went to California this fall to attend the wedding of his daughter.

Hal Manson has retired, and I had the pleasure of sitting next to Hal at the last Alumni Council meeting dinner. Hal says he has been busy as ever even though retired, and is enjoying his retirement. Abbott Allen and Sampson Cohen, who have been with Stone and Webster for many years, are now on the retired list.

Hal Billings and I see each other quite frequently as we both have business in common. I dropped in to see Dan Gibbs in Auburn, Me., a week or so ago; however, I was unable to see Dan as he was in the hospital. Fortunately he is on the mend, but will have to take it easy from now on.

I received a letter from Hiram Beebe who lives in Beverly Hills, Calif. He is now retired but is keeping busy as a director of Las Fiestas De Las Americas; he is also active in the M.I.T. Club of Southern California. — HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston, Mass.

## • 1911 •

Comes time to laud our faithful Assistant Class Secretary, Jack Herlihy, II, who retired from Boston Edison Company on November 1 after more than 40 years' service. But let's read the story from *Edison News* for November:

"John A. Herlihy, Vice-president and Assistant General Manager of our Company (Boston Edison) was tendered a reception by his fellow workers Friday afternoon, October 30, prior to his retirement from the Company. Mr. Herlihy celebrated his 65th birthday October 17. Earlier in the day President Dignan was host at a luncheon in Mr. Herlihy's honor which was attended by top officials, who presented him with an inscribed silver tray. Then later that afternoon, when hundreds of fellow workers, intimately acquainted with Mr. Herlihy during his more than 40 years of Company service, came to wish him well in the years ahead, he was presented with a beautiful autograph book bearing the inscription: 'The undersigned friends and co-workers of John A. Herlihy, during his 40 years of faithful service to Boston Edison Company wish for him and his loved ones many years of good health and happiness.' Also to help him spend some of those future pleasurable hours, he was presented with an attractive television set.

"During his long term of service, Mr. Herlihy gave diligently and unstintingly of his daily efforts to the continued progress of our Company. Assignments turned over to him were many times involved and difficult, but he had the knack of carrying them to completion with no loss of time.

"Mr. Herlihy took his first Edison job in 1913, after previously spending a brief period in construction and railroad work following his graduation from M.I.T. in 1911. His duties were chief inspector in the former supply department. During World War I he served with distinction in the Air Force from 1917-19, advancing to rank of captain. Returning to the Company he was promoted to assistant superintendent and in 1935 became superintendent of the then supply department.

"He was named assistant vice-president in 1942, assistant to the general manager in 1944 and elected a vice-president of the Company by the Board of Directors in 1945. On February 1, 1949, he was designated assistant general manager and was elected a director of the Company on October 27, 1952.

"He is a native of Lynn and married to the former Mabel Ivers who resided in Salem. They have three children, one daughter and two sons who served as officers in the armed forces during World War II. His home is at 588 Riverside Avenue, Medford." Accompanying the full-page story were some fine candid shots of the occasion, including Jack and Mabel and their two sons, Jack and Dick, admiring the television set, and another very informal shot in which "Mrs. Herlihy reminisces with Vice-president Thomas H. Haines (II)."

In the same issue is a tribute to Roger Loud, VI, who retired a month earlier, and the subtitle under a pair of pictures reads: "Upon completion of 38 years of Edison service, Roger Loud of the Industrial and Commercial Sales Division, retired on October 1. In insert, Roger at decorated desk on his farewell day at Edison; large photo is testimonial dinner at Hotel Bradford." That leaves Tom Haines, who has another year to go, "The Last of the '11 Men" with Boston Edison, Norman Wade, II, and Henry Schreiber, XI, having preceded Uncle Roger in retiring.

We had 15 classmates at our 1953 annual "Seven Come Eleven" dinner at Walker Memorial, M.I.T., on the seventh evening of the 11th month. Of course, we paid special tribute to Jack and Roger, and before the "talk-around" we stood in silent tribute to five classmates and two wives whose passing had been noted since the last class dinner. Those of us who had attended the off-season get-together last June at Snow Inn, Harwich Port, also reminisced on that point, and it was agreed that our 45th in June, 1956, should be a "must" for every '11 man.

Fred Harrington, I, still active in engineering with Whitman and Howard, Inc., Boston, had nothing new to report, but Morris Omansky, V, gave us his usual fine talk on new developments in the field of rubber — live and synthetic — where the bulk of his consulting work takes place. His talk involked an interesting discussion of the tire situation, and Morris warned that mileage is not the only criterion — one must also consider the hazard factor and, he added, in response to a question as to whether synthetic tires were getting any better, that he felt the tiremakers are just keeping tires good enough to try to avoid complaints — a compromise position between the satisfaction of the customers and the retailers' demand for turnover.

Next around the table was Jack Herlihy, who modestly said little about his testimonials from Edison Company, but did tell us he is retaining his membership on the company's Board of Directors. Tom Haines, II, next around the table, told us the details of Jack and Roger's month-apart farewell parties, and he said that with a year to go he was still a vice-president of the Company, with his principal duties in operating and engineering, with a bit of employee relations activity.

Art Leary, XI, who still heads the mathematics department at Hyde Park High School, Boston, has now completed 30 years in the teaching profession and has recently published a 500-page book covering regular grade plane geometry; he is now working on a smaller book covering grade IX algebra. Marshall Comstock, VI, who retired in late 1952 and then had a severe illness, said he was happy to be "back in circulation" again. He and his wife, Helen, took a fine Caribbean cruise in the late spring, and then traveled through the Panama Canal. They were on the freighter which was never identified positively that had the serious collision with the *Gripsholm*. They then spent the entire summer, after visiting in California and Oregon at the conclusion of their cruise, at their new summer home in the town of Cushing, Maine, on the St. George River, near Thomaston.

Bog Stevens, IV, retired on April 1 from Stone and Webster's Boston office on reaching age 65; he and his wife have two boys, nine and 14. Bog is doing some consulting work with the Cox Engineering Company in Boston on road construction, with particular emphasis on bridges. He also maintains his active interest in Cubbing and Scouting, he concluded. Charlie Linehan reported he is nearing retirement — three years to go — after more than 40 years of teaching at Rindge Technical School of the Cambridge public school system. Although he still maintains a real interest in high school and college football, he is, of course, no longer active either in coaching or scouting.

Obie Clark, II, said he is approaching at least semi-retirement for he is training a man who has been with him for 18 years in his Nelson Cement Stone Company in Braintree to succeed him as manager and is hiring another engineer to take over his (Clarkie's) engineering duties. He added that he is becoming more and more active as a director of the Quincy Cooperative Bank, having served for 22 years and having been a vice-president for about four years. He is now chairman of the security committee and performing some of the duties of the mortgage officer. His wife, Alma, he reported, is now very busy on a hobby of hers — collecting shells and giving talks to women's groups about it. Her collection of shells now numbers nearly 600 different specimens.

Roger Loud, VI, said he had had five times longer retirement than Jack (five weeks vs. one week), and he said he will never forget his last day at the office and the subsequent Edison group banquet in his honor at the Bradford — "such tokens make life really precious," he said. He and his wife greatly enjoyed a trip to Minneapolis to visit their older son and his family, flying both ways and marveling at the way ground can now be covered. They still are occupying the 11-room family mansion, so there is plenty of work to be done, he concluded.

George Cumings, VI, now looking and feeling much improved following his heart attack of early June which kept him away from our June get-together at Snow Inn (first reunion he ever missed) says he is able to do quite a few things now, including driving the car, and is once again enjoying life. Henry Dolliver, I, is now at the retirement age but still continues his work for Jackson and Moreland, famous engineering firm, at their Boston office. He is doing less traveling, he said, but told of their old-timers' dinner which he attended on November 5, at which columnist Bill Cunningham of the Boston *Herald* was speaker. He added that he is in a somewhat incongruous position — collecting a pension, but still working.

O. W. Stewart, I, and his wife are still dividing their time between their Kingston and Hyde Park homes and only six days earlier (on Sunday, November 1) he had picked some raspberries at his Kingston berry farm, where he is now having the time of his life raising cultivated raspberries and blueberries. He told us of the immensity of the problem of cultivating and properly mulching and otherwise preparing for good crops of berries. The Stewarts now have two grandsons and eight granddaughters.

Carl Richmond, I, retired on July 1 from Boston Manufacturers Mutual Fire Insurance Company, and he and his wife started for the Gaspé Peninsula shortly thereafter, stopped overnight in Rockport, Mass., and found in the morning that they could rent a most attractive house for the summer. They gave up the Gaspé idea and stayed right there and loved it. Their older boy is now in the Air Force, flying solo in Florida. Carl is doing some consulting work at present. That brought it back to Miss McConnell, and Dennie said there wasn't much new with Sara and him — still Chamber of Commerce work in Gardner, Mass., with summer in Cornish, Maine, for Sara and he getting there as often as possible on week ends and for vacation. There are still four granddaughters and three grandsons, and currently Dennie is serving as president of New England Association of Commercial Executives. He told the boys of the luncheon being planned by President Don Stevens and other '11 men in New York on Tuesday, January 12, at noon at the Architectural League, 115 East 40th Street, New York City, and urged them to attend if they happened to be in New York that day.

George Forristall, II, now a member of the promotion department of the Boston *Post*, Art Coupal, II, and M. J. Lowenberg, VI, had planned to attend but did not appear. President Don Stevens sent his usual greeting, writing: "All well. Enjoying autumn foliage here in Ridgewood, N.J. Lois, Junior, and her two daughters came from Cooperstown on October 18 and surprised us for week end. Wish I were able to be with you."

Ned Hall, II, wrote from Washington, D.C., whence his card addressed to his permanent Newburyport address had been forwarded: "Have shifted since I last saw 'you all,' from Office, Chief of Staff, Army, to Office, Secretary of Defense. Still trying to help keep our crowd ahead of Moscow and Peiping — sometimes a very exasperating job, when we keep on trying to fill up bottomless pits! And the anomaly of re-arming Germany and Japan!!"

Hal Hallett, VI, also unable to attend wrote: "Just changed jobs. Left Port of Boston Authority and now am chief supervising engineer for the Division of Building Construction under the Director of Administration and Finance, which means the supervision of building construction in the Commonwealth." Hal Jenks, VI, now retired and living in New Ipswich, N.H., wrote: "On August 27 a stepladder on which I was doing some painting collapsed, and I sustained a compound fracture of the left elbow and injury to two vertebrae. At the hospital my old enemy, phlebitis, took hold along with pneumonia, so that I just got home on October 14. Am still pretty weak. Hope you will have a successful dinner — my regards to all the mates."

I want to share two fine letters I recently received in reply to letters of sympathy I had written. The first is from Mrs. John Taylor Arms, Greenfield Hill, Fairfield, Conn., widow of the late John Taylor Arms, IV: "Thank you very much — for myself and in behalf of my family — for your warm letter about John. Please extend my appreciation to his friends in M.I.T. 1911.

"Although unable to be on hand for the reunions, John always felt close to his friend 'Dennie' and to others of his group. He was the sort of person who could be out of touch for a matter of years and then pick up the threads as if no such time had elapsed. He had an amazing way of sorting out people in his mind so that they were never 'people,' but each stood out as an individual no matter how infrequent the contact.

"John had so much to do in his own studio, with his family, as an artist among artists on whose work and progress he was interested, so many commitments that he selflessly tried to carry out whenever he felt he could be of help toward a person's better enjoyment or understanding, of prints in particular, and beauty in everyday living in general, that he was almost unprepared to have his health and body give out. Toward any sort of illness he felt a decided impatience because it tended to interfere with what he promised himself or others to do.

"Whenever any of you think of John, always know how exceedingly proud he was of being a member of the Class of 1911. Yours very sincerely, Dorothy N. Arms."

A joint letter to Sara and me from Liv Ferris, VI, said in part: "Thank you both for your prompt and kind responses and words of friendship and sympathy over my loss of Vara and over this back injury. It has helped a lot to have the homes of Eloise and Livingston in which to spend these past months, and I have been reluctant to return to Ashton, but now I am planning to return there November first. There will be much to occupy me till end of year, then perhaps I can come East and hope to be in New York for the annual 'Luncheon for Dennie' (January 12)."

Jack Herlihy sent me in late October the first two in a series of six I.N.S. syndicated stories he found running in the Medford *Mercury* entitled "Survival in the Air-Atomic Age." We of 1911 again swell with pride concerning our illustrious classmate, General George C. Kenney, I. The following digest of the I.N.S. editorial foreword reads: "During World War II, Gen. Douglas MacArthur said of Gen. George C. Kenney, commander of all Allied Air Forces in the Pacific, that he was 'unquestionably one of the best qualified air officers in the world.' Today, Gen. Kenney, now retired from military service but still extremely active in air circles, is concerned with what the U.S.A. must do to be prepared for — and win — a World War III if such a war should be launched by Russia. In these six articles the outspoken general, writing on the basis of his own experience in helping win two world wars, tells what he thinks this nation must do to survive in what he calls 'this air-atomic age.' He is convinced that the key to victory in any new war lies with air power — and that the triumphant nation will be the one with 'the best air force.'"

President Carl S. Ell, XI, of Northeastern University was a participant on October 22 at Hotel Statler, Boston, in a panel discussion held as part of the 38th Annual Meeting of the Associated Industries of Massachusetts. The topic was: "The Educator and the industrialist," along with President James R. Killian, Jr., of M.I.T. and the heads of Boston University, Dartmouth, Wellesley and Williams Colleges.

Harold Babbitt, XI, head of the Sanitary Engineering Department of the University of Illinois, Urbana, Ill., is the author of a book entitled *Sewerage and Sewage Treatment*, now in its 7th edition (New York, Wiley; London, Chapman and Hall; 1953, $8.00). Announcement was also made in mid-October that Colonel Richard H. Ranger, VIII, president of Rangertone, Inc., Newark, N.J., was elected to the Board of Governors of the Audio Engineering Society. — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

## • 1912 •

Arrangements have been made with Snow Inn at Harwich Port for a reunion next June from Friday, the 11th, to Sunday, the 13th. We shall have to give the Inn definite reservations by February if possible, so won't you sit down now, cross these dates off on your calendar and drop your Secretary a note saying you will be there with your wife and as many of your family as possible?

Fred Busby is now with the Department of Industrial Cooperation at M.I.T. in the Accounting Division. Fred has taught for many years in Boston business colleges and has a splendid background for his work at the Institute.

Your Secretary enjoyed a pleasant visit at Marblehead this summer with Nicholas T. McNeil who has been for many years superintendent of Salem Evening Schools. His children are now away from home and he and Mrs. McNeil enjoy their summer cottage on the shore during the season.

Your Secretary had the pleasure of meeting Hamilton Merrill, President of Manning, Maxwell, and Moore, at an

N.A.M. Committee meeting in New York. Ham seems to be standing up well under his responsibilities as he looked in the best of health. In hurrying through the Grand Central Station to catch the five o-clock back to Boston I ran into A. F. Allen of the New York State Department of Health.

Hugo H. Hanson has recently been made chairman of the board of the W. C. Hamilton and Sons Company of Miquon, Pa. Hugo joined this firm in 1928 and became president in 1936. He is past president of the Writing Papers Manufacturers' Association and is now serving as vice-president of the American Paper and Pulp Association.

We have received a letter from Bill Reeves who writes after a silence of many years. Bill is with the New Jersey Zinc Company at Palmerton, Pa., with a 34-year service record. He reports that nothing seems to happen to him, and, while he rates as head of the Research Department, he really keeps an eye on the business, the personnel and service branches in their many plants.

His only son, Tom, took industrial administration at Yale, graduating in 1943. After Navy service he was with the Aluminum Company for some time and now is with a management and consulting firm in Chicago. Bill reports that he spends too much time trying to raise grass and attending his flowers and shrubbery. Golf and bridge are his favorite relaxations. Lately he has become active in the Lutheran Church and was instrumental in the building of their new parish house.

Bill also reports regarding Alvin Thompson who now lives at Roanoke, Va. During World War I, Alvin was a lieutenant at the Ordnance Department stationed at Aberdeen Proving Grounds. He has been principally engaged in railroad work since 1913 and has been with Pennsylvania, and Norfolk and Western. His present title is assistant engineer of tests. He is in charge of the Dynonometer Car and at present is working on coal tests on one of the most modern steam locomotives. They recently completed comparison tests on a General Motor four-unit Diesel as compared with the present steam unit.

As you all know, the Alumni Fund drive is now on for the current year. For 1953, only 94 (or 29 per cent) of the 1912 active class roll contributed. The average contribution was $42.30. It seems as though 50 per cent ought to be able to contribute at least a small amount. Our per cent of contributors is low, so won't you please make a resolution to send a check now to this worthy cause? — FREDERICK J. SHEPARD, Jr., *Secretary*, 31 Chestnut Street, Boston 8, Mass. *Assistant Secretaries*: LESTER M. WHITE, 4520 Lewiston Road, Niagara Falls, N.Y.; RAYMOND E. WILSON, 8 Ogden Avenue, Swarthmore, Pa.

## • 1914 •

The once-in-five-years' call for a little financial aid to carry on the class activities always produces a happy bonus in the form of class notes. Just a word here and there adds up to a column of lively interest. For example, after all of these 40 years, Freddy Karns tells us he was married. November 28 was the date and Miss Margaret McBride of Franklin, Pa., the bride. The honeymoon was at Verodero Beach, Cuba.

Ralph Perry tells us that his daughter is at M.I.T. Janet graduated last June from Connecticut College, being one of the top 15 in her class and thus graduating with honors. In addition, she won the prize for highest rank in her major course, which was art. Actually, she is currently at Harvard in search of a master's degree in education. The M.I.T. association is due to the fact that certain graduate courses at Harvard are taught at the Institute. The reverse is also true.

Dinny Chatfield reports that he had a week end visit from Te Pin Hsi and his wife, who are located in Scarsdale, N.Y. Dinny also reports that he visited George Perley on Long Island and found that he had just completed a most attractive new house.

On October 25 the New York *Times* carried a picture and news item of the marriage of Miss Marjorie Chase to Robert Randolph Chapman at South Sudbury, Mass. Marjorie is the daughter of Thomas L. Chase. The bride and groom will reside in White Plains, N.Y., where both are associated with the Westchester County Department of Health.

Skip Dawson, who is treasurer of E. D. Jones and Sons, paper machinery manufacturers at Pittsfield, Mass., is a candidate for re-election in December as a director on the Board of Directors of the National Association of Manufacturers.

Art Peaslee comes to Cambridge from time to time to attend the Alumni Council meetings. When he was here on October 26, he told your Secretary that he had become a grandfather that day for the fifth time and was still hoping for more. Other classmates serving on the Council are Corney, Crocker, Hamilton, Morrill, Harold Wilkins, and your Secretary, so on meeting dates we have a miniature reunion.

Again it becomes your Secretary's sad duty to record the death of another classmate. Tom Randolph Cole died on June 30, 1952, at Sherman, Texas. Cole operated his own company for over 30 years but retired three years ago. No family details are available.

As far as your Secretary recalls, only three '14 men have had two sons graduate from the Institute. They are Leigh Hall, Lewis Wilson, and Walter Eberhard. If your Secretary has omitted any names, he would appreciate hearing of the facts. Walter Eberhard is still at the Institute as Professor of Graphics. This gives him a chance for a long vacation, which he took this summer by driving with his wife to California, then up the coast to Oregon. Walter's oldest son is at Towanda, Pa., and his youngest is teaching at the School for Army Personnel at Ausbach, Germany. During the Christmas holidays, the youngest son expects to make an air tour through the Middle East, Turkey, the Holy Land, and Egypt. Walter has a daughter, a Wheaton College graduate, who is married and living on Long Island, New York. The Eberhards have five grandchildren.

Ross Dickson certainly has drawn about the limit in hard luck. After having had rather long sessions of illness over the past two years, he had the misfortune in mid-October to fall while taking a shower and banged up his hip, knee, and shoulder. Fortunately, no bones were broken, but he was confined to his bed for nearly a month with heating-pad treatments. We hope that by the time these notes appear Ross will be roaring to go again and will have a new horseshoe up over his door.

June 18–June 20 at Pine Orchard, Connecticut! — H. B. RICHMOND, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass. ROSS H. DICKSON, *Assistant Secretary*, 126 Morristown Road, Elizabeth, N.J.

## • 1915 •

Our Class has suffered a hard blow in the sad passing of an outstanding classmate; St. E. Tower Piza died on October 26 in New York City.

Entering the Institute in September 1911, Tower graduated with our Class in 1915, and returned for his master's degree in Course IV in 1916. In his freshman year he won the Cabot Medal Award; in his sophomore year he was on our tug-of-war team and was vice-president of Cercle Français, and in his junior year was secretary-treasurer. In his junior and senior years he was a member of the Mandolin Club and was assistant art editor of *Technique*. His thesis, "An Architectural Design," was a distinct project. He was a member of the Architectural Society and the Walker Club. As an undergraduate, Tower was active and interested in all class affairs. As a graduate, he was active, loyal, and generous in his support of all 1915 and alumni activities, attending each of our five-year reunions at which time he was always the much sought after raconteur and surely is well remembered for his famous Cockney story, "'Alf and the Daisies."

He lived in New York City with his married sister, Mrs. Percy H. Crane, to whom the Class sent flowers and an expression of sympathy which Mrs. Crane acknowledged with a touching letter that emphasized Tower's fondness for all the class gang. One of the youngest members of our Class, Tower was born in New York City in September, 1894, and came to the Institute from Horace Mann School there. After graduation he became a registered architect and worked as a designer in architectural offices in New York City, and was a part-time instructor in architecture in New York University and Pratt Institute (Brooklyn). At the time of his death he was in the Planning Division of the New York City Housing Authority. During World War I he was in the Army, and, Anglophile that he was, during World War II, despite his age, he went to England as a senior intelligence analyst for the Board of Eeonomic Warfare, interpreting aerial photography for the U.S.A.A.F. and R.F.C. In this position he wrote a textbook on interpretive analysis of aerial cover which was officially used by his department in the service.

Whenever and wherever Tower was with us, "it was always fair weather, when good fellows get together." We share his sister's grief in this sad loss. "Arise ye men of 1915, lift up your steins on high" to a staunch and loyal son of M.I.T., a regular guy! — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

## • 1916 •

We're breaking into new ground, 1954, for the first time. Wonder how many of us greeted this new year with the same resolutions we were making back in the days when we were at M.I.T. One that we always like to mention at this time of year is the resolution to write the Class Secretaries often. You have been doing wonderfully on this item. Another thought that we would like to mention is that each of us should resolve that he will take it just a little easier this year. We have been going at too fast a pace, and it would be wise for us to taper off this pace considerably this year and even more in the years to come. So many of our classmates have learned this lesson too late.

Here's the letter from Vert Young which we couldn't get into our last issue: "Your letter smells strongly of crocodile tears, and I blush a little to think that it takes crocodile tears to get any biographical or news items out of me. Never having appeared in the class notes, I had better sketch briefly from the beginning. Following graduation, I went to work for the Aluminum Company of America in New Kensington, Pa. After two years in the Army (77th Division), I returned for a few months to the Aluminum Company, but left in January of 1920 to join Lieutenant Colonel Clifford W. Gaylord, with whom I had served in the 77th and who was engaged in the manufacture of corrugated boxes in St. Louis. We practically went through the wringer in the short depression in 1921 but emerged with a few bones uncrushed and a healthy regard for the value of the dollar, which, fortunately, has not been completely eradicated by the years since 1933. We are now the second largest manufacturer of corrugated and solid fiber shipping containers in the country, with plants in nearly every section of the country, except New England and the West Coast.

"In 1923, I probably made the master stroke of my career when I bamboozled a young lady by the name of Sylvia Corley to become my much-better-half. We have been happily married, but not blessed with children of our own, although we seem to have a supply of others always at hand – the present foster family numbering seven with another on the way, if you can imagine such a thing. In 1937, the box company known as Robert Gaylord, Inc., merged with the Bogalusa Paper Company which in turn had been founded and owned by the Great Southern Lumber Company, the largest of the longleaf pine saw mills in the deep south. The saw mill cut out in the spring of 1938 and the Gaylord Container Corporation, the merged company, fell heir by the merger, or subsequent acquisition, to the forest properties and a lot of miscellaneous town properties in Bogalusa, including a 96-bed hospital, some 700 houses, a commissary and the city electric light system. Of the unrelated properties thus acquired, starting with the hospital, it would be hard to pick an aggregation containing more in the way of grief and problems than the four items enumerated. All have since been disposed of, except a few houses.

"In June, 1938, I came south to fill a vacancy caused by the resignation of the manager of the Mill Division at Bogalusa and have remained here ever since. Our pulp and paper mill presently has a daily capacity of about 775 tons of sulphate pulp and 125 tons of semi-chemical, and a capacity of board and paper production of about 950 tons a day. Products include container board, bag paper, wrapping paper, asphalt laminated paper and a number of interesting specialty items. One of the interesting aspects of the pulp and paper business is the problem of growing your own wood supply. The Great Southern Lumber Company in 1921 practically pioneered the artificial reforestation of cutover lands on a commercial scale. Up to the time of their liquidation, they had hand planted about 26,000 acres. The earliest of these plantations, now 32 years of age, are Meccas for forestry tours from literally all over the world. We now have a total of 99,000 acres of hand planted pine and an additional 373,000 acres of naturally reforested timber or lands yet to be planted. During the planting season of 1952-1953 (December through March), we set out on company lands a total of 18,635,000 pine seedlings on slightly over 24,000 acres of land, which I think is a world's record for a single company. Probably as a result of the company's interest and stake in forestry, I have been privileged to serve for eight or nine years on the Louisiana Forestry Commission, three years as its chairman.

"Our section of Louisiana is a delightful spot in which to live. We are only two hours by automobile and one hour by plane from the center of New Orleans, but in all truth we like the country living so well that we seldom visit New Orleans except on business. The only drawback seems to be our great distance from our old haunts in the East. I think Ed Barry and Tom Little are the only 1916 men who have been in Bogalusa, and yet I venture that there have been in New Orleans many whom we would have been happy to see, and who would have enjoyed a visit had we known they were in New Orleans. A most cordial invitation is extended to '16 mates who happen to be in the city – business phone, Bogalusa No. 1; home phone 414. See you at our 40th reunion, if not before!" Thanks very much for a wonderful letter, and keep in mind, Vert, that we will be having informal reunions in each of the "off" years early every June.

We also received this nice letter from Nat Warshaw in time for the previous issue but had to hold it over because our space quota had been filled. "I haven't a great deal of news since my letter of long ago. The business I'm in keeps me pretty busy. Last May, while we were exhibiting at the Materials Handling Show in Philadelphia, I ran into Ed Weissbach; he looked fine. I asked him if he intended to come to the reunion but he regretted that it wouldn't be possible. As you know, I attended the reunion myself and enjoyed it immensely. It was really a pleasure to meet the fellows again. I made the suggestion at that time, and I think you were going to do something about it, namely, that we set aside a definite week end each year when we would gather at Coonamessett Ranch Inn between the five-year reunions. In other words, without any notification we would all know that if anyone of us spent that particular week end there, we would be sure to run into some of our classmates. The reason I made the suggestion is because the place is so ideal for rest and relaxation and at that time of the year, just before the summer season opens, it is a most desirable place to be. I feel that if even two of us spent a week end there, it would be most enjoyable and worthwhile. Somehow you ought to be able to work out a date or a week end which would be implanted on our minds, and we would not have to wait for notification, and you wouldn't have to go to that trouble each time.

"Incidentally, I meant to mention that in connection with the Industrial Packaging and Materials Handling Exposition next week, M.I.T. is sponsoring a short course in packaging and materials handling. In fact, my talk is part of this program. As you may recall, I have been engaged in the materials handling industry since 1922 when it was a very small infant, and no one had any idea of the size to which it would grow. I feel particularly pleased that M.I.T. has recognized the value and importance of this industry by sponsoring the course mentioned above. About the only classmate I see occasionally is Harold Russell. I talked with him on the phone the other day; he was feeling fine and is looking forward to another reunion on the Cape. Since the last time I wrote, my youngest son was married while attending Northeastern. He graduated in June of this year. I wouldn't be at all surprised if I become a grandfather again before the reunion in May or June, if we have one. Bob's wife was born in Vienna but spent most of her life in England and was there all through the war. My oldest son, Stanley, Class of 1944, was responsible for my becoming a grandfather almost three years ago. Deborah Susan is, without a doubt, the most wonderful little girl that ever lived.

"Aside from the above I have been rather active in the Boston Stein Club. The other day we presented M.I.T. with two funds; one to assist students from Technion in Israel and the other a Freshman Loan Fund for residents of Greater Boston. I am enclosing a copy of the little publication I edit in connection with the Boston Stein Club so that you can garner more from that if you wish. I should have mentioned, too, that I met Izzy Richmond there at the meeting the other night and he seemed fine after the accident he had several months ago." Many thanks, Nat, for a fine letter and all the "tub-thumping" for the annual reunions. There will be one, you can be sure, early next June.

Then, we have this news release on our old friend, Francis Stern: "Stern and Company, Inc., of Hartford, Conn., announced today that it had acquired the stock of its retiring President, Francis E. Stern. Mr. Stern, widely known in the electrical appliance industry, has headed the company for 34 years. He will continue his affiliation as a consultant. Mr. Stern founded the Company bearing his name as a retail operation. The Company, however, pioneered the wholesale distribution of radio parts and subsequently

complete radio sets. Mr. Stern personally developed the first fixed bar variable condenser known to the industry. Manufactured under the 'Fesco' trademark, this condenser as part of the Reinartz tuner became known from coast to coast as the earliest of the 'knocked down' radio sets so popular in the early days.

"Under Mr. Stern's guidance, the Company grew to be recognized not only in the radio but in the entire electrical and gas home appliance field. Mr. Stern has always participated in activities of associations connected with his industry. A past President of the Radio Wholesalers Association of the 20s and early 30s, he has consistently served on industry boards from those connected with N.R.A. to the Committee of the Department of Defense during World War II. A member of the Board of Governors of the National Association of Electrical Distributors for several years, he is currently a member of its Executive Committee and national chairman of the Junior Achievement Committee of this Association. In addition to his trade activities, Mr. Stern is chairman of the Wholesale Division of the Hartford Chamber of Commerce, a director of the Better Business Bureau, a director of the Hartford Symphony Society, a trustee of Temple Beth Israel of West Hartford, and president of the Hartford Jewish Federation."

Another news release announces: "George M. Maverick, 35 Aberdeen Road, Elizabeth, N.J., Manager of the Employee Relations Department of the Standard Oil Development Company, has completed 30 years' service and was presented his service award today by E. Deur Reeves, Executive Vice-president. Dr. Maverick received his bachelor of science degree in chemical engineering from M.I.T. and his doctorate from the University of Geneva. Upon his discharge from the United States Army, after serving overseas in the Ordnance Department in 1917-1918, he spent two and one-half years in India. After a short period at M.I.T. as a research associate, he joined Standard Oil Company (New Jersey). His subsequent assignment included periods in the Technical Service Laboratories, and in 1928 he was appointed director of the research laboratories and assistant manager of research and development. After a short period as director of industrial relations for the Development Company, he was appointed manager of their employee relations department, the position he now holds."

We also received word of a new book written by Laurin Zilliacus — *Mail for the World: From the Courier to the Universal Postal Union* (New York: John Day).

And then there was this notice: "Dr. Vannevar Bush, President of the Carnegie Institution of Washington, announced today the publication of *Algal Culture: From Laboratory to Pilot Plant*. The monograph, to which many distinguished investigators in the field have contributed, summarizes the current work bearing upon the mass culture of algae as a possible means of increasing the world's supply of vegetable protein. Dried algal cells grown under favorable conditions contain over 50 per cent protein, or more than is found in any of the higher plants. In many areas of the world there is now a critical shortage of suitable proteins."

Here's an interesting bit of information from Bill Barrett regarding Old Sturbridge Village. Bill continues as secretary of the Metropolitan Life Insurance Company in New York and writes: "One of my extracurricular activities has been the trusteeship of Old Sturbridge Village. For the benefit of classmates who may not know, this is a recreated early New England village of the period of about 1800 to 1820, located in the heart of Massachusetts near the town of Sturbridge. It comprises several hundred acres, traversed by the Quinebaug River, in which acreage there has been erected about 60 buildings. All of the houses are originals of very early vintage which were torn down, moved here, and re-erected. The Village itself and its concept is the outcome of the collecting habits of Mr. A. B. Wells and his brother, Cheney Wells, formerly executives of the American Optical Company. The immediate set-up and operation of the Village is under the personal supervision of Mr. and Mrs. George B. Wells. As a trustee, I have found considerable interest in the development of the Village, particularly in the crafts shops and craftsmen in the Village. The ultimate objective is to have a group of master craftsmen live and work in the Village, producing well-designed objects of their crafts with the label, 'Old Sturbridge Village.' The project is well under way, and we had over 100,000 visitors during the current summer season. As an added attraction, it built and operated a summer theatre, in which the play of this season was *The Devil and Daniel Webster*. Classmates in the vicinity will find a visit to Sturbridge Village extremely interesting."

Joe Barker is good in the pinches. We recently wrote to him saying that we needed some news and what could he offer. He indicated that there was nothing particularly new on the Barkers for the '16 news. Then he went on to say: "Although I could not attend the 37th reunion, I did get up to Tech for Alumni Day and saw the group there. As usual we had a grand time. I presented a paper last June before the American Society for Engineering Education at the Gainesville meeting, in which I attempted to point out the dangers to our engineering schools which arise when too high a proportion of their total research budgets are on government research contracts. The Institute, fortunately, took steps to isolate the government contracts from the regular research budget and, while the shock of any sudden cancellations will be severe, the long range effects have been minimized. Other schools are in a much more precarious position." And Joe has received further honors recently. In June he gave the commencement address and received another honorary degree from Ripon College in Wisconsin. And on July 1 he succeeded Dr. Karl T. Compton as chairman of the Research Society of America, a companion society to Sigma Xi, having branches and clubs in the industrial research laboratories of the country.

We regret to report that word has been received that Paul Thomas passed away on November 4, 1953. Your Secretary has written to his family expressing the sympathy of the Class.

Dick Berger is still actively pressing the fight for cancer prevention. What was formerly known as Richard D. Berger Research, Inc., is now known as Cancer Prevention, Inc. In line with a recent request for news, Dick wrote: "Cancer prevention is still the big thing in my life. I have been giving numerous talks on this subject to service and church organizations, and distributing an immense amount of free literature. On October 1, the Chairman of the Interstate and Foreign Commerce Committee, House of Representatives, wrote me asking for a statement of what I proposed to say to the Committee at its public hearings on the subject of cancer. I knew that if I sent a statement, I wouldn't be invited. Now I am asking for a joint session of Congress to listen to me. (See the enclosed letter.) On October 25, I wrote to President Killian at M.I.T. expressing the opinion that unfavorable publicity would depress the value of the common stocks of the tobacco companies included in the portfolios of the securities held by the Institute. I received a reply from Treasurer Joseph Snyder that my views would be presented for consideration of the Finance Committee at its next quarterly meeting."

That winds it up for another month. Best wishes for a very happy, healthy and prosperous New Year. Keep the letters coming. — RALPH A. FLETCHER, *Secretary*, P.O. Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York 14, N.Y.

## • 1917 •

We are making a final effort on the 50th reunion class gift. Several contributors have been added to our list since the 35th reunion. We have seven definite commitments and about 30 fair prospects still to work on. If by chance we overlooked you as a prospect, we shall be most happy to hear from you. The estimated total as of November 1 is $93,000, which is not too bad. This is due, though, to some very generous contributions from a few members of the Class, and the total number of contributors, 70, is rather disappointing. If you cannot donate as much as your heart dictates, won't you at least do something to help us, or I should say the Institute?

Heine Gartner has found the perfect answer to his retirement problem. Several years ago he went into business for himself on a shoestring. By hard work and good management he was more than moderately successful. When fire destroyed his plant a couple of years ago, he decided it was an opportune time to retire, thanks in part to a generous settlement by the insurance companies. He bought an old house, about 200 years old, in Wellfleet on the Cape, and has done a beautiful job of restoring it, mostly with his own labor. His hobby for several years has been making reproductions of early American pine furniture. His wife, Jo, has had a hobby of refinishing old furniture. So they made their barn into a place of business under the subtle name of Barn-

crafters and have more business than they can take care of refinishing, repairing, and, when Heine has time, building reproductions. They find the community life on the Cape wonderful. The Bernards and the Dohertys visited the Gartners on one of those beautiful Indian summer Sundays, which have been so prevalent this fall, and had a delightful time. If any of you are in that vicinity, we can assure you that you will find two genial hosts with a well-stocked bar and ice box. If the ice box happens to be a little empty, Heine will run down to the beach and scrape a few dozen oysters off the rocks for you.

Ed Doherty has retired, too, from the Warren Soap Company. His hobby is contract bridge, and from personal experience we venture to guess that he, with the able assistance of his Dutch wife Ella, makes as much in the course of the year as Heine does.

The Monsanto Chemical Company gave out the following press release recently: "Carlton M. Dean has been appointed manager of the engineering sales department of Monsanto Chemical Company's Organic Chemicals Division, it was announced today by John L. Hammer, Jr., general manager of sales for the division. . . . The engineering sales group handles the sales and engineering work on contact sulfuric acid plants utilizing Monsanto's vanadium catalyst, as well as De Nora mercury chlorine cells and the Monsanto sludge acid decomposition process."

Tom Ryan apparently made a move in the right direction when he left Boston to go into the refractory business. His good performance with the Basic Refractories in Cleveland has led to his appointment as vice-president and manager of the Alton Brick Company of Alton, Ill., where he has the responsibility of directing and co-ordinating the sales and manufacturing activities of that company.

It seems inconceivable to your secretarial staff that a guy about 60 years old could learn a foreign language, but we guess we are not sufficiently acquainted with the capacity of the academic mind. The following letter from Barney Dodge illustrates the point in question: "You asked me to send you a little statement about my projected trip to Spain. This was started by a request from the State Department who wanted someone in chemical engineering to give a series of lectures in that field at the University of Barcelona. There was just one catch to it and that was that all lectures had to be in Spanish. At the time I agreed to take on this assignment, I didn't know any Spanish. Since the first of June I have been studying it in all the spare time I have available. I am leaving on the 12th of December and expect to return about the first of April. In addition to giving 16 lectures at Barcelona, I hope to travel around Spain and see something of the country and its people. Since I will not be able to speak Spanish fluently, I am having the lectures completely written out in Spanish so that they can be read. What happens if they wish to ask questions, I don't know. That will have to be worked out after I get there." Your Secretary made the helpful suggestion that the cosmopolitan ability of the Spaniards to understand English might turn out to be of considerable assistance.

There is an old saying that if you live right all will be well with you. We have the exception to prove the rule. Did you ever know anyone, excepting Lobby, of course, who lived more right than one Rudolph Beaver? The following letter from his attractive daughter Cynthia relates the sad consequences of a virtuous life: "Dad has asked me to give you a 'news flash' for the Technology Review class notes. On Tuesday, October 20, he was opening the garage doors to put the car away when the car crept down the sloping driveway, pinned him against the doors, and broke both of his legs. We rushed him to the Mt. Auburn Hospital where it was learned that he suffered a compound fracture in one leg, and a rather serious break in the other leg because the bones were shattered. If the legs do not require resetting, he probably will be allowed to come home in three or four weeks. Of course, it is very difficult for him to degenerate into a sedentary life from an active life. He and mother had just returned from a three-weeks' trip to Chicago and Canada and were enjoying excellent health. At the moment he is most uncomfortable because the weight of the casts prohibit any movement on his part from his hips down. Happily, he can wiggle his toes. It certainly was a shocking night for all of us. My mother had had an operation on her feet that morning and was confined to bed until Sunday. They are both in Wyman House, so are able to see one another frequently. I believe Dad calls on Mother in his wheel chair in the morning, and vice versa in the evening. Fortunately, my brother's two-year hitch in the Army was completed last Friday, and he will be home some time this week to assume the responsibility of the business. This seems to describe Dad's plight adequately. It was an extremely unfortunate accident, and we will just have to sit by and wait for nature to heal him. I think it is safe to say that he will be in Wyman House until the middle of November (and undoubtedly in casts until spring), and I am sure he would be most happy to hear from you."

By the time you read these notes we hope that Rudy will have completely recovered from this painful injury. We hope you don't have to be operated on during his absence from business, for with all due respect to Rudy's son and his Army training, we doubt if he can put the super razor edge on those surgeons' knives that Rudy has become adept at doing.

If any of you missed the wonderful article by Jim Killian'26 in the November issue of the *Atlantic Monthly* on our defense against atomic attack, we suggest that you put it on your reading "must" list. It is one more bit of tangible evidence of the contribution which the Institute and Jim, as its President, are making to our national defense.

Walt Whitman has a new item to add to his trophy room. At a meeting of the New England Chapter of the American Institute of Chemists, he was presented an honorary membership for his many contributions to the defense effort and for his service to the profession. — RAYMOND STEVENS, *Secretary*, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge 42, Mass. FREDERICK BERNARD, *Assistant Secretary*, 24 Federal Street, Boston, Mass.

## • 1918 •

Your scribe has been alerted in fine fashion by four different newspapers, that on Saturday afternoon, October 3, a simple ceremony took place at St. Michael's Episcopal Church, Marblehead, the nature of which was experienced by many of us some 30 years ago, but which comes to few at our age. Miss Elizabeth Gamble, escorted by her brother, approached the altar in blue nylon lace, where she joined, and was legally joined, to Lester Northrup Woodland. He was known to us for his activities in the Architectural Engineering Society and the Chauncy Hall Club, to say nothing of his good looks. Following a reception in the parish house, the couple set off on a motor tour through Vermont. We recommend this, having done it ourselves with great happiness under exactly similar circumstances years and years ago. The happy couple will live in Melrose.

Good news seems to us to travel the faster. Anyway, we have only now learned of the death of Donald H. Montgomery on August 13. Born in Waseka, Minn., Don spent much of his youth in Maine and Vermont. He left M.I.T. to become an airplane pilot during World War I. After the war he went to work for the National Acme Machine Company as New England sales engineer. In 1927 he joined George O. Gridley and Earl Wheeler to found the Gridley Machine Company in Hartford. Two years later the firm merged with the New Britain Machine Company to become the New Britain Gridley Machine Company. In 1936 the firm once more became the New Britain Machine Company and at the time of his death Montgomery filled the multiple offices there of vice-president, member of the board of directors, chief engineer in charge of engine development and design. He is survived by his widow, three sons, and two grandchildren. Herbert H. Pease, Chairman of the Board of Directors, in his eulogy of his former associate, stated that "In the loss of Donald Montgomery, the New Britain Machine Company will miss the stimulating genius of an unusually brilliant mind that cannot be replaced." Burial was in Windsor, Vt.

Mrs. Magoun and I spent a happy overnight visit with Fred Philbrick at his Wellesley home. He showed us plans of a housing development he is promoting on property adjoining the Charles River in Wellesley and Dover. It is a beautiful site, skillfully laid out. No house lot contains less than an acre of land. The woods bordering the stream contain wild life, even signs of deer, though Fred says he has never seen more than footprints. What intrigued us most was his having found an old skeleton in the most remote part of the property; an event allowing all sorts of speculation from murder, through suicide, to mere lying down in peace. Bill Wills has designed and is supervising the building of a ranch-type house for the retiring vice-president of the Turner Construction Company who has elected to

live in our town about two miles from us. He has a better view of Mt. Monadnock than we, but no frontage on a pond. In October I had occasion to be in Harrisburg, Pa., on business and saw Quentin Berg'37, who has made a name for himself as a designer and builder of continuous dies. He has a nice business, and it is going to be much nicer. He also has three lovely daughters, two fine sons, and a wonderful wife. – F. ALEXANDER MACOUN, *Secretary*, Jaffrey, N.H.

## • 1919 •

Our 35-year reunion plans have been finalized and have just reached your Secretary. The Class will meet at Wentworth-by-the-Sea at Portsmouth, N.H., June 11, 12 and 13, and it will be a mixed reunion. Wentworth-by-the-Sea is on the coast about 50 miles north of Boston, and the Committee has arranged to meet parties coming to Boston by air or train and drive them directly to the hotel. It looks like the Committee is getting fired up, and we shall all look forward to a real get-together to celebrate our 35th. So far the Committee includes such names as Will Langille, Bill Banks, George McCarten, Ark Richards, Don Way, Wirt Kimball, George McCreery and others whom you will hear about soon. You will also hear more about the wonderful plans that the Committee will prepare to make our reunion one of the most enjoyable ones that we have ever had.

Your Secretary also takes this opportunity to wish everyone the very best for the New Year.

Glad to have news from Bess Sindler Fichter, who writes: "At present am leading a life of complete leisure – no hobbies, no activities (outside of some slight volunteer community work). Family consists only of myself and one daughter, a member of the Maryland Bar and now married."

The *Oil Forum*, November, 1953, carries an article by Charles Chayne, "Progress through Technology." He points out that the oil industry and automotive industry have provided the people of this country with a means of transportation adaptable to their needs, convenient, dependable, economical and continually improving. He expects the petroleum industry to provide fuels with increasing octane numbers and says such fuels will be utilized by the automotive engineers for the advantage of their customers.

A fine letter from George McCreery: ". . . thirty years of happy married life have been completed, and Edna and I are both looking forward to many, many more. My son Jack, an engineer also, is in the construction business with me, carrying a heavy load due to my joining the 'Coronary Club' a little over a year ago. . . . Jack is married and has two little girls – Susan, two years, and Sally, eight months. They live in Wellesley, Mass., a short distance from our Newton Centre home.

"Janet, my daughter, is a junior at Beaver Country Day School; stands well in her class in regular and extracurricular; is a good sailor, as her many prizes attest, as also in tennis.

"Our family summers at Menauhant, East Falmouth, Mass., a small community of 55 homes where we sail, swim, play tennis and enjoy the many activities of a summer colony. I have completed my years of commodoreship and now plan to freely enjoy my boat, an Egg Harbor cruiser, when time will allow."

Robert Falkenberg is now located in business in Kansas City, Mo., and lives at 6115 Lockton Lane, Mission, Kansas. John Falkenberg is still in Denver, residence Sherman Plaza Apartments. From Harry Cikins: "I have been divorced from the engineering world since 1932. I have been in the life insurance field for over 20 years, specializing in estate planning. I am married, have three sons, two of whom are now at Harvard studying for their Ph.D. in political science. Did you say 35th-year reunion? Just doesn't seem possible. Will try to attend."

Ev Doten writes from Detroit, where he is still in the automobile business, that he planned and executed a vacation trip in the spring to Florida and had intended to swing up to New York to visit with us. As it turned out, he spent the entire time in the South, so we missed him. Ev says that George McCarten is doing a swell job of rounding up the Middle West boys for the 35th reunion, which we now understand will be at Wentworth-by-the-Sea in New Hampshire, June 11 to 13.

It is good to have a word from Denny Denison, who writes, "Glad to report good health with the passing years. Manufacturing elastic, primarily for women's wear, so keep in touch with youth and styles. Have one son and one granddaughter." – EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 385 Madison Avenue, New York 17, N.Y.

## • 1920 •

The date impels me to wish you a most happy and successful New Year and to remind you that when one more year comes around we'll be having another big reunion. Since each reunion seems to be better and more enjoyable than the previous one, we really have something to look forward to in 1955. Any suggestions from you as to how to make it even bigger and better will be gratefully received and considered.

According to a recent feature story in the Boston *Globe*, Alfredo Zubiria lives in the ancient city of Cartagena, Colombia, where he introduced modern sanitation to the city and now relaxes with his profitable hobby of keeping bees. According to the *Globe* reporter, Zuby has fond memories of his days in Boston and is coming back for reunion next spring.

A notable wedding in Worcester this fall was that of the son of Ernie Whitehead, Richard Duncan Whitehead to Gloria Carolyn Stephans. Donald Whitehead, M.I.T. '45, was his brother's best man.

Lauren Hitchcock has opened an office at 331 Madison Avenue, New York, to offer specialized counsel and service on industrial research and development operations. Lauren has had 28 years' experience in this field.

In a pamphlet recently issued by the National Fire Protection Association, of which Percy Bugbee is general manager, it was interesting to note three adjacent names in a distinguished list of sponsors. These were Ed Farrow, Vice-president of Eastman Kodak Company, Al Glassett, President of W. J. Barney Corporation, and Pete Lavedan, President of the Liquid Carbonic Corporation. It is always pleasing to see such evidence of greatness in a great Class. – HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

## • 1921 •

Happy New Year! May you enjoy it with good health, happiness and all the satisfaction which a full life can bestow. Our Class Agent, Ed Farrand, has sent out reminders that the 13th annual Alumni Fund started last October, providing the annual opportunity to rededicate ourselves as loyal sons of M.I.T., and to give material evidence of our belief in all that the Institute stands for, and our support of its unique leadership in so many fields of endeavor.

This is the mid-point in time between our 30th and 35th reunions and your class officers are fully aware that the next two and a half years will pass at the increasing tempo of the times. A reservation has therefore been made for us to celebrate our next reunion at the Sheldon House, Pine Orchard, Conn., on June 8, 9 and 10, 1956, and then to proceed to Cambridge on June 11, which has been designated as Alumni Day 1956. Whether you are nearby or far away, please shape your plans so as to join the group at this most enjoyable spot on Long Island Sound, which has been the scene of two previous and highly successful reunions. In the meanwhile, we will continue to hold the popular annual class party on Alumni Day at the banquet hotel in Boston just before the Stein Banquet. You may wish to note the date of the next one as Monday, June 14, 1954.

A. Abba Orlinger, counselor at law in patent, trademark, copyright and related legal matters, has announced the removal of his New York offices to Suite 1730, 11 West 42nd Street, New York 36, N.Y. Abba also maintains offices at 6655 McCallum Street, Philadelphia 19, Pa. You have already seen or will soon see an article in *Reader's Digest* about the Institute, written by our literary lion, David O. Woodbury, who emphasizes the value of research and its bearing on teaching. Possibly this note may serve as the catalytic agent to wangle the annual letter from Dave. Another Hexalpha, Ralph M. Shaw, Jr., has recently seen his handiwork in print in no less than *Life* magazine. John W. Barriger, 3d, reports that his business offices are in the La Salle Street Station executive suite of the Rock Island Line, Chicago. Jack is vice-president of the railroad.

Writing from his home on Rock Run Road, Havre de Grace, Md., under date line of "The day following the night of the record snow storm," Dugald C. Jackson, Jr., of the Army's Aberdeen Ballistic Research Laboratories, trains his long range artillery on the writings of Rufe Shaw and your Secretary to rival the former in recounting travel and to excoriate the latter for omitting the names of two VI-A men from the November class notes. Says Dug,

in part: "When The Technology Review arrives, the first thing I look at is the 1921 class note section. The Review arrived yesterday but I did not get to see it before dinner as is customary, because the storm delayed my arrival home. Cars were scattered all over the highway and up Chapel Hill, and I had to turn back to Aberdeen. Our home is at Level (pronounced by the old timers with the accent on the second syllable), about six and a half miles from the local reference point, the traffic light on US 40. It had been snowing since early that morning and there was a driving wind. I decided to try Paradise Road again but found some 20 cars held up by an insignificant rise and managed to turn around and return to Aberdeen, where I parked the car and started to walk. With two lifts, I finally arrived home at 8:00 P.M., having started from the Laboratories at 4:45 P.M., about 10 and a half miles away. All this in Maryland, the crossroads between the South and the North. As one chap put it, 'This is Chicago weather.' Having recounted the saga of my journey to Betty, I looked at the mail and found The Review. My eye caught the words 'Course VI-A' and I discovered how unobservant you must have become since you took electrical lab at Tech." Dug notes that Rufe Shaw is not the only member of the Class who can write accounts of travel and that we left out the names of Edward R. Chilcott and Dugald C. Jackson, Jr., from the list of those in the VI-A group picture, and continues: "There were 16 members of the Class of 1921 in the picture and you have listed 10 others in snapshots, leaving two unaccounted for. These two are the late Yssell Y. Young and Jacob Teich'22. There were 27 of us who started in that first class of VI-A at the beginning of the junior year. Dave Woodbury joined the Course at the end of the first winter quarter, and Young left the Institute during the graduate year. So far as numbers go, the Class made an unusual record — the same number finished as started." Dug's compliments on the 1921 notes are greatly appreciated, and we can thank him and the many others of the Class who send in material for this column of class notes.

John D. Crecca, a naval captain, has left Washington and reports a new address at 131 Chilton Hall, Elizabeth, N.J. George T. Welch is comptroller and assistant treasurer of Vassar College, Poughkeepsie, N.Y. Sumner Hayward, transmission engineer of the New York Telephone Company, has gone back to the Brooklyn executive offices after a sojourn in the lower Manhattan headquarters of the company. Sumner lives in Ridgewood, N.J., and is active as the head of the Educational Council activities of the M.I.T. Club of Northern New Jersey, of which Joseph Wenick is treasurer. New addresses have been received for Pierre F. Beaudry, Henry A. Hutchins, Jr., Walter A. McKim, Joseph J. Schaefer, Jr., Henry F. Shea, and Wilfred B. Sylvester. On behalf of the Class, sincere sympathy is extended to William H. F. Rose, Jr., on the recent passing of his father.

Don G. Shingler, a brigadier general and, since 1952, the chief of staff of the Army's Engineer Center, Ft. Belvoir, Va., has been appointed North Pacific division engineer, with offices at 500 Pittock Block, Portland 5, Ore. A graduate of West Point and Technology, he served two previous tours of duty at Ft. Belvoir as a student. During World War II, he was a member of the Iranian Mission and later headed the Persian Gulf Service Command. In 1944, he took charge of the International Division, Washington, D.C., and was responsible for the supply of military lend-lease materials. In 1946, he became deputy administrator of the War Assets Administration and later that year he went to Europe as chief engineer of the U.S. forces. Since his return from Germany in 1949, he served as division engineer for the Upper Mississippi Valley Division and for the Missouri River Division, the latter during the record-breaking floods on the Kansas River in 1951 and the upper Missouri the following year. He is the holder of the Distinguished Service Medal, the Legion of Merit with Oak Leaf Cluster, the Order of the British Empire and the French Legion of Honor.

Now is the time to come to the aid of your Secretary — with news. — CAROLE A. CLARKE, *Secretary*, Federal Telecommunication Laboratories, 500 Washington Avenue, Nutley 10, N.J.

## • 1922 •

The August issue of *Dun's Review and Modern Industry* includes an article by Crawford H. Greenewalt entitled "Speaking up for Business" in which he says, "I like to think that business as a profession has come of age and its members can now stand before the world as practitioners of a difficult and complex art without which the world would be the poorer. Prestige for this new profession will come, I know. It will come as people begin to understand and appreciate the contribution of business to the social, cultural and spiritual advancement of our country. The executive must take real pride in his accomplishments. He must share that pride with his associates and family. He has every reason to be proud. If he is to enlarge the scope of his profession and insure its future, he must communicate that pride to all the world."

Earl H. Eacker was elected president of the American Gas Association at the 35th Annual Convention held in St. Louis last October. Buck had previously been a vice-president and we are happy to see him now at the top of this organization. Minot R. Edwards, senior vice-commander of the Weymouth American Legion Post was recently appointed national assistant sergeant at arms by the national commander, Lewis K. Gough. The position is an honorary appointment and is in recognition of the Weymouth Post's activities for the past year in county and department affairs and of the Post's community service record in child welfare work under the chairmanship of Vice-Commander Edwards.

For the past three years Edwards has been employed by Army Ordnance at the Boston Army Base. He is chief of the cost estimating branch, a new branch organized by him to estimate and set up target prices for purchase of all weapons, ammunition and tank-automotive equipment used in the defense effort of the Army. The system of estimating which he developed has recently been adopted in Washington and regulations have been issued for its use in purchasing in the Ordnance branch of the Army throughout the country.

Gus Hemeon, who is now an outstanding authority on the operation of hydraulic equipment and is hydraulic engineer of the Ternstedt Division of General Motors Corporation, lectured on "The Use and Abuse of Oil in Industrial Equipment" at the Professional Division Meeting of the American Society of Mechanical Engineers at Philadelphia last September.

George Dandrow, Vice-president of Johns-Manville Sales Corporation and General Sales Manager of the company's industrial products division, has been appointed a member of the advisory board of the 57th Street office of Manufacturers Trust Company, Fifth Avenue at 57th Street, New York City. In addition to this newly assumed position, George is a director of the New York Building Congress, a member of the Sales Executive Club of New York, the American Society of Civil Engineers, the Building Arts and Engineers Clubs and the Moles of New York.

Dexter Shaw appeared at the meeting of the Patent Section of the American Bar Association in Boston last August looking very well indeed.

Perusal of the latest Directory of the Alumni Association would appear to indicate that although our Class is still represented in the local activities of the Alumni Association, we are not doing as much as we used to as officers of M.I.T. Clubs about the country. Ted Miller is our top man in Alumni Association activities, being a member of the Executive Committee until 1954. In addition, Ted is chairman of Alumni Day for the coming June. The following are on other committees of the Alumni Association: George Dandrow, Chairman of Audit and Budget; Oscar H. Horovitz, a Friend of the M.I.T. Library; Parke D. Appel on the Committee of Honorary Members; Harold E. Koch and Whitworth Ferguson are Members at Large of the Council; Ken Sutherland who was elected to the Office at the 1952 Reunion is our class representative on the Council. Council Representatives of M.I.T. Clubs are as follows: Parke D. Appel — Urbana; Robert H. Brown — Bridgeport; C. Yardley Chittick — Washington; Warren T. Ferguson — Atlanta; Oscar H. Horovitz — Harrisburg; A. Robert Tonon — Cleveland; Karl L. Wildes — Schenectady. Fred Dillon is an associate of the Council. Alumni representatives on Departmental Visiting Committees are Horace W. McCurdy — Mechanical Engineering; Edwin D. Martin — Metallurgy; Paul Ryan — Economics and Social Science; and Raymond C. Rundlett — English and History.

Officers of M.I.T. Clubs from our Class are the following: William L. Hawes, President of M.I.T. Club of the Kanawha Valley; John Skelton Williams, President, M.I.T. Club of Virginia; Dwight VandeVate, Jr., is president-elect of the M.I.T. Club of Rochester; Yoshinori Chatani, Vice-president, M.I.T. Association of Japan; Samuel H. Manian, Secretary of the M.I.T. Club of Washington; Frederick N. Dillon, Jr., Vice-president, M.I.T. Club of

Central Massachusetts; C. Willis Stose, President, M.I.T. Club of Philadelphia. The following, appointed by the President of the Institute as "Ambassadors of Technology" in their respective communities, interview and assist prospective students and in other ways co-operate with the Administration of the Institute: John L. Liecty, Phoenix, Ariz.; Charles E. Brokaw, Denver; William K. MacMahon and Robert K. Thulman, District of Columbia; William E. Huger, Jr., Atlanta, Ga.; Fred C. Koch, Wichita, Kansas; Willard B. Purinton, Augusta, Maine; Robert H. Brown, Fitchburg, Mass.; Preston Robinson, North Adams, Mass.; Everett W. Vilett, Short Hills, N.J.; Whitworth Ferguson, Buffalo; Thomas S. Craig, Elmira, N.Y.; C. George Dandrow, William H. Mueser and Raymond C. Rundlett, New York City; Dwight VandeVate, Jr., Rochester; Edwin A. Gruppe, Syracuse; Val Friedrich, Jr., Hamilton, Ohio; Philip M. Alden, Philadelphia; C. Willis Stose, Philadelphia; T. M. Taylor, Kingsport, Tenn.; Roland H. Becker, Milwaukee; H. W. McCurdy, Seattle; John O. Bower, Bogota, Colombia; and Werner Schoop, Zurich, Switzerland.

We have the sad duty of reporting two more deaths: James F. Downey, Jr. died on October 4, 1953. No other details have as yet become available. Robert P. Hidden, Proprietor of the Fitchburg Hardware Company, Fitchburg, Mass., died on October 9, 1953. Our sympathy is extended to the families of these classmates.

New addresses: Francis H. Sargent, 2423 North Underwood Street, Arlington 13, Va.; Captain Howell C. Fish, Commandant First Naval District, 495 Summer Street, Boston 10, Mass.; C. George Dandrow, Apt. A3-830 Palmer Road, Bronxville, N.Y.; Colonel Robert S. Barr, 16 Chauncy Street, Cambridge 38, Mass.

A letter from our President, Ray Rundlett, advises that after October 26, 1953, his business address is the Curtis Publishing Company, 380 Madison Avenue, New York 17, N.Y.

Very little personal news has been received in recent months. It would be appreciated if a little more mail could be headed in your Secretary's direction even if it contains news which the writer thinks of little consequence. It most likely would be of interest to the rest of us. — C. YARDLEY CHITTICK, *Secretary*, 41 Tremont Street, Boston 8, Mass. WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo 3, N.Y.

## • 1923 •

News clippings were scarce this month; the principal item concerned Louis Skidmore, IV, who heads the architectural firm of Skidmore, Owings and Merrill with main offices in New York, Chicago and San Francisco. The firm specializes in the design of hospitals, office buildings and hotels, all of which reflect the distinctive type of architecture. Generally, the buildings are constructed of standard structural members to which are added the latest developments in insulation, heating, and lighting, all integrated to fulfill the studied needs of the client. In addition to the three principal offices, Skidmore's firm sets up temporary project offices throughout the world as the need may arise.

Kent T. Healy, VI, Professor of Transportation at Yale, spoke recently before the Connecticut Chapter of the Delta Nu Alpha Transportation Fraternity in New Haven. Healy is considered quite an economist as well as a transportation authority. First he received a B.A. degree from Harvard in '21, and then another degree from M.I.T. two years later. His first job was with the New Haven Railroad; later he went to Europe to study railroad operations, and in 1928 he joined the Yale faculty.

A recent card announced that Bernard Lewis, formerly with the U.S. Bureau of Mines, has joined with three others to form the new firm of Combustion and Explosives Research, Inc., with offices at the Alcoa Building, Pittsburgh. — HOWARD F. RUSSELL, *Secretary*, Improved Risk Mutuals, 15 North Broadway, White Plains, N.Y. WENTWORTH T. HOWLAND, *Assistant Secretary*, 480 Walnut Street, Newtonville 60, Mass.

## • 1924 •

Won't say anything here about reunion. You've had the first announcement already; more will follow. Suffice to say that, in some respects at any rate, the addition of our wives will bring about certain changes in our past procedure. A few extra-added attractions are being cooked up which should make for joy and jollity and also a bit of fun. Probably won't be any "surprise feature" business about it, since you'll all be asked to come in on most of them, in one way or another.

Even before any details went out, a good many said "I'll be there." Johnnie Henninger was one. So was J. Adalberto Roig. Al, incidentally, has picked up another vice-presidency recently to add to his lengthy string. This is a sugar property in Louisiana in which he has acquired an interest, and along with it title of vice-president and director. He also expects to be a two-time grandfather by the time these notes appear. His daughter, Aileen, raised him to this hoary status for the first time a year and a half ago. It is assumed that Al expects to regain his professional fishing status in the Long Island Sound waters next June. Maybe you will remember that at our 25th he came off with the prize — for the smallest fish!

For years we have had no information about Stanley P. Fosgate. At long last comes news that he has evidently been doing something ornithological as vice-president of the Lon Worth Crow Company. Now, however, he has gone into competition with Tom Coogan as vice-president of Stockton, Whatley, Davin and Company, "one of the South's leading real estate, mortgage, etc., firms," in charge of their Miami office.

From the New York Sunday *News:* "Ford In-Law Married. Yesterday's posh wedding in town: Barbara McDonnell . . . of 910 Fifth Avenue and Southampton, L.I., and sister of Mrs. Henry Ford, 2d, was married to John Francis Hennessy, Jr., son of Mr. and Mrs. Hennessy of 77 Park Avenue." If the father of the bride gets only honorable mention, the father of the groom gets none at all. That's the last we hear of Jack! John, Jr., graduated from the Institute in '51, served in the Air Force with the Air Research and Development Command.

A note from George DiSomma says that Ed Wininger engineered a good gathering of M.I.T. men at the New York A.S.C.E. dinner in October. George did a bit of missionary work when in Washington recently. He looked up Frank Moore and gave him a good sales talk on reunion. The more of this the better. Those of you who were at the 25th know how much fun these things are, and should consider yourselves as missionaries, too.

New addition to our list of educators: on the faculty of the ABA's Graduate School of Banking at Rutgers, Joseph M. Naughton. This doesn't mean that Joe has given up bank presidenting — this is just on the side. Impressive brochure being distributed by G.E., "Down the Stretch to Light's Centennial," all about Light's Diamond Jubilee next year, an address by W. H. Robinson, Jr. Speaking of Thomas P. Coogan, as we were a few lines back, comes a newspaper report that he "has resigned or will shortly submit his resignation" as head of the Armed Forces Housing Agency. Sounds logical if, as the story goes on to say, Defense Secretary Wilson is abolishing the agency!

From California comes word that Harry E. Terrell, land planner and consultant of Garden Grove, died unexpectedly on October 6. Terrell was a past president of the Garden Grove Lions Club and an active member of the Associated Chambers of Commerce of Orange County.

Feature story in the Boston *Post* quotes John T. Blake, "1953 winner of rubber's Oscar, the Charles Goodyear Medal," at great length. He's research director of Simplex Wire and Cable. Principal conclusion is his firm conviction that natural rubber is through, that in this area "the future of the world and particularly the United States lies in the field of synthetic rubber."

So much for now. Two reminders: the 1954 Alumni Fund, with a $30.00 average goal for our 30th; and the reunion itself, June 11-June 13, 1954. Plan to be at the latter, and if you haven't taken care of the former yet, how about it? — HENRY B. KANE, *General Secretary*, Room 1-272, M.I.T., Cambridge 39, Mass.

## • 1925 •

News for this issue of The Review is extremely sketchy. Your Secretary would greatly appreciate it if a few of you would keep him posted on your doings and not require him to have to strain his eyes scanning the newspapers for bits of news to repeat in this column.

Thanks to the financial editor of the Boston *Post*, I learned of the activities of Garfield A. Drew, VII, of the Drew Investment Associates. Drew is quoted in discussing his technical approach to stock market movements as saying, "It is often said that no mechanical system can be devised which will accurately forecast the market or show profits all the time. That is quite true." The *Post* editor states further that Drew's analysis of the stock market's technical position is substantially

based on the volume of odd-lot transactions, as indicative of the general public's attitude toward the stock market.

On this basis, on September 15, the day after the stock market made its low to date for 1953, he advised his clients: "Believe Tuesday saw the low for some time." This was exceptionally accurate timing, and in the light of this statement, it is interesting to note that Drew's organization as of November 13 has reversed its earlier position, and as of that date his publication stated: "For the first time, the intermediate upswing that began two months ago looks over or nearly over. Since we assume that the basic trend is down, sale of stocks purchased on our September 15 buying recommendation is advised." Some weeks will have elapsed by the time you read this so perhaps you would like to check this last prediction.

President Ave has received a letter from Ron Mitchell who has discovered the mystic formula for determining one's age which he attributes to one Corey Ford. This is too long a statement to include in class notes but if you have not already read it, it is advised that you look it up because some of us feel that it fits the Class of 1925 to a "t."

Horace Weihmiller, IX-B, who was, at last reports, director of the Aircraft Consulting Service in Washington, D.C., has recently joined the engineering department of the Republic Aviation Corporation, Farmingdale, Long Island, N.Y., and has moved with his family, wife and two boys, to Brightwaters (near Bay Shore) on Long Island. — F. LEROY FOSTER, *Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

## • 1926 •

While we had no '26 visitors during the summer, we have already reported some fall visitors to Pigeon Cove. Larry Cumming and his wife, Adelaide (who is Betty Crocker on your TV set), recently dropped by. They had been on a business and vacation trip to San Francisco, Seattle, Victoria, Vancouver, Edmonton and Calgary. After that they reported considerable satisfaction in sitting on their Wilton, Conn., hillside and munching apples from their orchard. The Peter Doelgers also were here, and we learned all about Pete's new Town Tennis Club which is located in Sutton Place, New York City, between 55th and 56th Streets among the Doelger apartment houses. The club will open shortly and it is such an unusual set-up that *Life* magazine is going to run a story on it. The outdoor courts are designed for use during all four seasons and are floodlighted for night play. In addition to the finest of facilities, the club manager and supervising pro is to be J. Donald Budge. Doesn't it sound plush?

A couple of press releases tell of recent promotions. Bill Edwards is now electrical branch manager of the District Public Works Office at Pearl Harbor, Hawaii. Henry Gunning has been appointed dean of the faculty of applied science at the University of British Columbia but will retain his position as head of the geology and geography department. Our congratulations to these '26 men! Recently we had occasion to visit Albert Lamoureux at the Dennison Manufacturing Company in Framingham, where he is an important member of the research organization. Al's daughter, Jean, is a freshman at St. Joseph's College in Emmitsburg, Md., which is near Gettysburg, the school is the oldest girls' college in the United States. His son, Robert, is a plebe at Annapolis, and Albert told me with justified pride how his son got into the Naval Academy. He missed the original Congressional appointment by a fraction in one of the exams so he joined the Navy. After two years' service Robert was permitted to take the Navy examinations for Annapolis and passed with flying colors. Such determination will get this kid a long way. Al is lucky to have both son and daughter in Maryland for he can visit both on the same trip.

Periodically, our Assistant Secretary for the architects comes through with a fine report and we will now quote Al Laing from Urbana, Ill.: "A new honor was conferred upon Bob Dean at the Annual Meeting of the American Institute of Architects, held at Seattle in June, when Bob was made a fellow of the A.I.A. In the citation he was commended for his achievement in architectural design and for his public service. Bob, as you know, is a member of the Boston Architectural firm of Perry, Shaw, Hepburn, Kehoe, and Dean, and with this firm is responsible for many improvements in the architectural setting of Boston and elsewhere. Those of you who saw the August 20 issue of *Life* (that in which Dr. Kinsey's magnum opus II was reviewed, in case you have forgotten) will recall the photograph of Bob's overseas cemetery near Cambridge, England, with a mosaic mural by artist Francis Bradford. Bob is now a brigadier general in command of the 94th Division Artillery and was on active duty in August as a change from his architectural career. He and Mrs. Dean have four children (the oldest boy, Assistant Professor of Mechanical Engineering at the Institute) and four grandchildren.

"Hi Waters is now living in a home (it must be his 14th) he built among the redwoods in Boulder Creek, Calif. I am sorry to report that Mrs. Waters passed away about a year ago. Hi maintains his interest in ceramic design and is always on the lookout for Course IV classmates, so if you are near Boulder Creek, look in on him. So far as I know (my information is several years old) Homer Huntoon'28 is still in Hollywood, Draver Wilson in Los Angeles, and Ira Beals'27 in Sacramento, Calif. Fred Buenz is successfully 'architecting' in San Antonio but seizing every opportunity to go hunting and fishing with his two fine boys. Harriett is, no doubt, an excellent fish-frier and bear-roaster. As for your occasional correspondent, I continue to have a wonderful time with embryo architects at the University of Illinois, opening skulls and trying to implant some ideas as to where we have been and where, perhaps, we are going in architecture. My acquaintance with the student point of view was reactivated a few years ago by a return for a year to special studies in art and architectural history at Harvard, followed by further examination of source material in France and Italy. That is about all the news I have for the present, George. I'll be on the lookout for more. — Best wishes as always. — Al Laing."

Even though it is mid-winter we have a report for you on our sailboat status. We have purchased a new boat — a real "hot-rod." Among sailboats the Star is the most hybrid of racing craft and we had decided some time ago to get one for next season. A small builder at Riverton, N.J. builds the finest in the world — one of his boats owned and sailed by an Italian Navy Officer won the world's championship in Naples last September. There are only a few of these Lippincott boats in existence and we stumbled upon one right here in Boston. What makes it a real story is that the boat belonged to an M.I.T. graduate student who brought it with him on a custom trailer. Having recently acquired a wife, the Star boat was on the market, and it now belongs to your Secretary. She is all white glistening enamel, keel, bottom, topsides and deck, and her new name is *Flying Cloud*. There is only one drawback — it will be impossible to blame the boat for poor performance. At least we have a few months left to study racing tactics.

The clipping services recently sent us an interesting story about Barney Gruzen from *Institutions* magazine. Barney and his architectural firm of Kelly and Gruzen have received many honors for their unusual contributions to the design of institutional buildings. One most unusual design was that of a high school for Brooklyn in the shape of a banjo, a large circular four-story building joined to a lower long narrow building it will look just like a banjo from the air. I don't know whether or not classmates Shepard and Mancha were the inspiration for this building but Barney certainly should dedicate it to them. Last month we promised to give you a story that Whit Ashbridge has sent us from Venezuela. We have gone over it with care and it will be just as good next month — it's really good enough for the *National Geographic* and far more readable. Therefore, since we want to give it considerable space we hope you will bear with us until the February issue. See you then! — GEORGE WARREN SMITH, *General Secretary*, E. I. du Pont de Nemours and Company, Inc., 140 Federal Street, Boston, Mass.

## • 1929 •

Detailed information should be reaching each member by now by direct mail to keep all informed of the progress of the 25th reunion. The enlarged committee, consisting of Brig Allen, Eric Bianchi, Paul Donahue, Jim Fahey, Ed Farmer, Wally Gale, Paul Gill, Sears Hallett, Fish Hills, Sol Horwitz, Frank Mead, Jack Osborn, Carl Peterson, John Wilson, Otto Wolff, and Chuck Worthen, have been meeting regularly to crystallize the plans for what promises to be our biggest and best reunion. A committee of wives has been organized to make sure that your "better half's" trip to Tech will be one to remember.

Eric Bianchi has gathered in a few short notes from fellows about the country; Babe Donnelly reports in with two sons from sunny California. He doesn't say how tall they are; Gratz Brown with Fram Corporation, Dexter, Mich.; Cliff Kit-

tredge from Princeton University with some good advice for the reunion; Glen Andrews, Wood River, Ill.; Al Eigenbrot from London; Elmer Skonberg from Mishawaka, Ind. Elmer apparently travels to New York on business but doesn't go hungry while there.

Romeo Guest writes from Greensboro, N.C., "Note our firm is in its 60th year and my brother, Walter, and I are at the helm trying to keep the ship afloat through turbulent waters. We have enjoyed good business and are proud of the many fine nationally known companies it has been our privilege to serve through the years. Construction is an up and down business though, and we have seen good and bad times. My son, William S., is in the Navy and stationed at Moffett Field, Calif. He was over in the Korean waters aboard the U.S.S. *Essex* for about two years. He believes he will be in the United States for awhile now.

"My daughter, Lucia, went down to Florida to begin her preparatory type training and attended Graham-Eckes School at Palm Beach. She will be down there for five years through her high school years. She returned home this summer the master of sailing a Snipe, and so necessarily the old man has learned to sail the Snipe which he was 'persuaded' to buy. I keep busy and going hard all the time. As you know, it is up to me to find the new business for my firm and this takes me out of town most of the time, into the New England and New York City areas. Nothing changes much for me but things keep rolling along. I hope to be able to stop by and see you and some of the others in your area one of these days when I can find a day without a business call to make." I also received an excellent brochure of his company's work covering a wide field of construction. It easily explains his working hard.

Sam Shaffer, XV, sends a short note on his doings: "My path has led me into department store work, and I have been out here five years in Los Angeles, as controller of the May Company stores in this area. Not many of our classmates get into retailing, but I found it a very challenging and satisfying field. Prior to Los Angeles, I spent 15 years in New York City with the R. H. Macy organization. We have a very active M.I.T. group here in Los Angeles, but as yet I have not bumped into any of our '29 classmates. I have been married for many years and have two daughters who are now in their teen ages; I can assure you they keep me pretty busy keeping up with them. If any of the gang are out this way at any time, I would be delighted to have them drop in and say 'hello.'"

Otto Wolff, II, has been appointed engineering manager for factory equipment at Polaroid Corporation, Cambridge. Otto has been with Polaroid since 1935. The Lindberg Engineering Company's new plant in Chicago, designed by Mary Ann Crawford, IV, recently received the "Factory of the Month" award in that city. According to *Business Week*, John Dreyer's Polacoat, Inc., hit the jackpot on 3D glasses. Congratulations, John. Emmette Izard, V, has recently received the Jacob F. Schoellkopf medal of the Western New York Section of the American Chemical Society. The award was made "in recognition of his research on the chemistry of high molecular weight condensation polymers, and contributions to the development of a process for the production of polyester fibers and film." Captain Bill Creedon, VI, has just been made chief of the Coast Guard 7th district engineering division with headquarters in Miami. Ken Gold, V, who is with the Ordnance Department, Emerson Radio, has been promoted to lieutenant colonel in the Signal Corps Reserve.

In attendance at Alumni Day festivities last June were Brig Allen, Newton Bryant, Eric Bianchi, Walter Gale, Carl Harris, Fisher Hills, Ray Shriver, John Wilson, Howard Pankratz, Ed Farmer, Otto Wolff, Paul Donahue.

Hunter Rouse is coauthor of a book entitled *Basic Mechanics of Fluids.* Carl Crocker is with the Celanese Corporation and very much on the move. He cites going directly from Bishop, Texas (temperature 75 degrees), to Edmonton, Alberta (temperature 28 degrees below). He has two sons and a daughter, Jerry, 20, and Dick, 16, in the Navy, and Linda, nine. Carl was for a Cape Cod reunion but then he should be partial to the Cape. We all remember his hospitality at the 20th.

If you haven't returned the questionnaire you received in November, do so now!!! — PAUL F. DONAHUE, *Secretary,* Conti and Donahue, 239 Commercial Street, Lynn, Mass. FISHER HILLS, *Assistant Secretary,* Dewey and Almy Chemical Company, Cambridge, Mass.

## • 1932 •

We finally tracked down Tom Jenkins. He is living quietly (?) at 1932 South Boulevard, Houston, Texas. He is project manager for the Fish Engineering Corporation and finds himself traveling on a radius that swings from Mexico to Alaska. We enjoyed seeing Tom in New York during the war. Too bad so many of our classmates are out of the eastern territory. Tom married Mary Gage, a University of Oklahoma graduate. They have a daughter, Jill, three years old.

Energetic Art Marshall has devoted extracurricular time to studying law and was admitted to the bar last spring. He is now associated with the firm of Cooley and Cooley, 1340 Main Street, Springfield, Mass. Art plans to develop a general practice and to specialize in matters pertaining to federal and state regulation of commerce and industry. Having a lawyer in our midst would seem to add prestige to our Class.

Dana Price has joined the staff of Golemon and Rolfe, architectural engineers in Houston, Texas. Dana is chief engineer of the firm, co-ordinating the work of their mechanical and electrical engineering associates with the architectural and structural work.

One of our West Point classmates, Colonel William J. Crowe, is the new commanding officer of the Springfield Armory. Colonel Crowe had been attached to the Field Service Division and, just before his new appointment, was with the Industrial Division of Ordnance. Another leading Army officer associated with us, Brigadier General Ralph M. Osborne, has been serving as senior Army representative at the current peace talks in Panmunjom.

Howard Carver has been elected to the Board of the Gleason Works, Rochester, N.Y. He joined Gleason in 1934 and became sales manager in 1946. Glad to see our executive list growing.

From Switzerland we hear from Rene Hochreutiner, now Chief Engineer and Director of Kraftwerk-Laufenburg, A.G., a big hydro-electric power company. Rene and his wife, Norette, have four children and live at Baslerstrasse 303, Laufenburg, Switzerland. He is a member of the Swiss Electrical Committee, President of the Association of the Boundary Power Plants on the Rhine and a member of the European Electric Systems Operators Group (U.C.P.T.E.).

Willard Meyer has been transferred from the division office of American Can Company to their main office in New York as assistant packing and material handling supervisor. His address is Box 145, South Salem, N.Y.

Al Newton has joined the executive engineering staff of Coleman Company, Inc., as chief design engineer. Until recently he had been vice-president in charge of engineering of Acme Industries, Jackson, Mich., and had been associated with major manufacturers of air conditioning equipment and controls since he left college. In 1952 Al received the American Society of Refrigerating Engineers award for the best technical paper on air conditioning. He is on the Board of the Air Conditioning and Refrigeration Institute and is active in several other technical societies.

Phil Benjamin is assistant manager of purchasing for the American Optical Company. His address is Box 3, Brimfield, Mass. He married Helen Mather of Melrose in 1935. Their two daughters, Bette and Susan, are 14 and 12. He is active in general small village activities as Chairman, Library Trustees, President, Couples Club, Boy Scout work, and so on. Phil says he spends his spare time gardening, raising sheep, woodworking, and collecting and restoring antiques. Sounds like an interesting life.

Christian Grosser has just become chief engineer of Philip Morris and will live in Richmond, Va. It will be a big move for the Grossers with their five children, as I know from recent experience. Chris's family about parallels mine, with ages ranging from five to 13. He has spent his professional time in various machine tool designs, automatic control and military fire control and has published several articles and patents. Chris taught at M.I.T. from 1938 to 1944 and at Syracuse from 1947 to 1951.

George Bisbee is electrical project engineer, Chambers Works, E. I. duPont de Nemours and Company He lives at 803 Woodsdale Road, Wilmington, Del., with his wife and two girls, Mary Susan, 13, and Jane Austin, six.

Curtis Cummings is another that has foresaken our traditional ivory tower for sales work. He is sales manager for the Allison Company, manufacturer of abrasive cutting wheels for metals, glass, plastics and ceramics. With his wife, Helen Higbee, and two children, David and Judith Ann, he lives at 454 Verna Hill

Road, Fairfield, Conn. Curtis is a director of the Bridgeport Sales Executive Club, is active in Sunday school work and has as hobbies, two of my favorites, eight millimeter movies and model railroading.

Bill Knowles is a partner of Hertzka and Knowles, architects. He lives at 1365 Columbus Avenue, Burlingame, Calif., with his wife and two children. Bill designed the Central Research Laboratory for the University of California Radiation Laboratory at Berkeley. He is a member of the San Francisco Chamber of Commerce, Olympic Club and Lakeside Golf Club. He plays first violin in the Peninsula Symphony and operates a vineyard and winery in Santa Clara County on the side. Sounds like a rewarding existence!— ROBERT B. SEMPLE, *Secretary*, Box 111, Wyandotte, Mich. *Assistant Secretaries:* WILLIAM H. BARKER, 45 Meredith Drive, Cranston, R.I.; ROLF ELIASSEN, Room 1-138, M.I.T., Cambridge 39, Mass.

## • 1933 •

A bouquet this month to John Sterner and Westy Westaway for their thoughtfulness in distributing a few snapshots of reunion activities last June. Candid to say the least, and scarcely the type of picture to convince one's family that sobriety increases with the years, the results nonetheless demonstrate genuine class spirit and the beneficial results of even two days of relaxation with old friends. John Sterner is one of the key men in Baird Associates in Cambridge. Together with Sam Prescott, Westy shares the honors of being '33's most eligible bachelor — at least at this writing, almost three months before publication. Westy is an Alumni Council representative and is always eager to serve the Class effectively. Sam holds the reins of a family business in Derry, N.H., and is always as jolly as his dimensions would indicate.

Another member of our Class residing in New Hampshire who demonstrates class interest regularly is Warren Henderson; officially retired, Warren is an active director of Warner Swazey and a full-time, high quality farmer in Exeter, N.H. Moving on to Cambridge, one member of the Class merits special mention: John Trump, whose research and applied techniques in x-ray therapy have received deserved attention in the medical world, goes about his teaching and experimental activities at M.I.T. with a nonchalance that is not in keeping with the importance of his contributions to the cancer field.

Even if the price of a postcard has increased, how about a few words covering your current activities? — GEORGE HENNING, *Secretary*, 330 Belmont Avenue, Brooklyn 7, N.Y. ROBERT M. KIMBALL, *Assistant Secretary*, Room 24-105, M.I.T., Cambridge 39, Mass.

## • 1937 •

Happy New Year, everybody! 1954— Just think, 20 years ago we were green freshmen celebrating our first New Year as Tech "men"; now we are thinking of when our sons and daughters will start college. We sometimes wonder why we don't get together more often — perhaps some of you do and we don't hear of it. There is one group of us that does gather two or three times a year for dinner, games, and talk; it is a fraternity group and includes several classes but seems to have a very successful formula. The meetings are held at different homes ranging in area from Plainfield, N.J., to Bridgeport, Conn., with a good scattering in between. There are eight homes involved that we can recall now. A get-together is planned weeks in advance and is actually a big week end for all, with week end guests lodged in nearby homes for those who come from 100 miles away or more for the party. It starts with cocktails followed by a buffet dinner and may be followed by poker, bridge, or plenty of talk and refreshments. You could start one in your area; it only takes three or four families to get the ball rolling.

At the last one we had, Bob Fischel was planning to come all the way from Washington, D.C., where he is living at the University Club, to Nichols, just outside of Bridgeport, Conn. While there, a phone call to Gil Mott revealed that they had done something like that in the spring except that it was at a public hostelry, the Heublein in Hartford, Conn., for dinner and later at the University Club for "a social evening which included the showing of movies of the 10-year and 15-year reunions. Everybody had a fine time and agreed that we should do it more often. Wally Wojtczak deserves a vote of thanks for his initiative and efforts in arranging the affair. Those present were: Ed Hobson, Four Maples, R.F.D. 1, Monson, Mass.; Ruth and Phil Dreissigacker, Jr., Orange, Conn.; Bob Morton, 82 Sunset Farm Road, West Hartford, Conn.; Rachel and Albert Shulman, 134 North Beacon Street, Hartford, Conn.; Betty and Cliff Lytle, 84 High Street, Thomaston, Conn.; Lucille and Nick Nickerson, 310 Fountain Street, Springfield, Mass.; June and Walt Wojtczak, 73 Van Buren, West Hartford, Conn.; Eleanor and Van VanDorn, 3d, 25 Forest Street, New Britain, and Gil Mott, 92 Beers Place, Stratford, Conn." Thanks Gil! There you are, fellows; there is the pattern — you take it from there.

At the last reunion at Weekapaug your Secretary suggested that it would be a good idea to have an election of class officers at each reunion; perhaps you fellows would like a change of scenery at the head table; maybe some of us would like to move over and let someone else carry the ball for awhile — besides it is the American way to have a voice by vote. Well, everyone was too interested in swimming, tennis, golf and what-not, so nothing was done about it at the time. Now the Alumni Association is preparing a Class Officers' *Manual* and in it there is provision for just such an election. Several months before the reunion the President should appoint a nominating committee to prepare a slate of officers to serve for the next five years. Of course, nominations could be made from the floor as always. "Regardless of whether any, or all, current Class Officers are renominated, experience shows that holding an actual election at each reunion is the procedure most satisfactory to all concerned — much more so than a vote taken by mail ballot directed to the entire class list." Be thinking about it because there is going to be an election at the next reunion. In mentioning this, I am reminded of the wonderful job done by all the fellows on the committee at the last reunion. It was very well planned and run. It isn't too early to start planning for the next one in 1957, so let's go with some suggestions to pull a good one out of the fire. — WINTHROP A. JOHNS, *Secretary*, 34 Mali Drive, North Plainfield, N.J.

## • 1938 •

This month's news is brief. One item tells us that Bob Landay is now a member of the technical staff of the Hughes Research and Development Laboratories in Culver City, Calif. The balance of the news concerns August Schomburg who has recently been promoted to brigadier general. He is now chief of the supply section's procurement branch at the Army's European Headquarters in Heidelberg, Germany. He was formerly stationed at Fort McNair, Washington, D.C. — DAVID E. ACKER, *General Secretary*, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge, Mass.

## • 1940 •

This month the Class is apparently operating on the theory that "no news is good news." Consequently, the column will be brief. Your Secretary received a brief letter from Milt Green and also had the pleasure of speaking with him on the phone. Milt is still with Polaroid and enjoying it very much. James Moore was recently named general manager of Vacuum Metals Corporation, a subsidiary of the National Research Corporation. Another classmate has also received a recent promotion. Harold Hawes has been appointed head of the mechanical engineering section in the Design Integration Department of the Guided Missile Laboratory, Hughes Research and Development Laboratories in Culver City, Calif.

Well, your Secretary has now been off the government payroll for a month, and his only regret is that he did not enter private patent law practice sooner. He was also happy to discover that two other Tech Alumni are associated with his organization. Dave Varner'36 and Allen Kirkpatrick'43 have both been with Cushman, Darby, and Cushman for some time.

It is you who make this column interesting to read, so how about writing Al a line (or maybe two) today? — ALVIN GUTTAG, *General Secretary*, 7814 Marion Lane, Bethesda 14, Md. MARSHALL D. MCCUEN, *Assistant Secretary*, Oldsmobile Division, General Motors, Lansing 21, Mich.

## • 1941 •

A happy new year to you all! How about a resolution to keep your Secretary posted on your whereabouts and doings? It's the best way to keep the column lively and interesting.

The American Meteorological Society recently published, as one of its series of monographs, *Thirty-day Forecasting: a Review of a Ten-year Experiment*, by Jerome Namias, Chief, Extended Forecast Section, U.S. Weather Bureau. The extended forecast began very informally, but its subscribers have gradually in-

creased, and now include public utilities, agricultural groups, fuel distributors, and others. Forecasts are issued twice a month, to cover the next 30 days, and are usually made for large areas of the country. Dave Josefowitz and his brother, Sam, set up an organization called the Musical Masterpiece Society a little more than a year ago, and have so far sold more than 600,000 long-playing 10-inch records to some 35,000 devotees of fine music. If you're interested, the records cost $1.50 each, and the address is 250 West 57th Street, New York City.

Lew Fykes was recently appointed vice-president in charge of sales of the Cleveland Hardware and Forging Company, Cleveland, Ohio. Nice going, Lew!

I had a few words with Jean Hartshorne'43 not long ago. He reports that Pierre is still thriving on the Los Alamos climate. Burnham Kelly was a guest speaker at the National Conference of Editorial Writers held in Boston on October 17; his talk was entitled "Reshaping our Cities."

Latest address changes: Commander Henry A. Arnold, U.S. Atlantic Fleet, Submarine Force, Fleet Post Office, New York, N.Y.; Roy W. Brown, Jr., 304 Florida Avenue, Oak Ridge, Tenn.; Andrew T. Caramihas, 33 Imperial Street, Bridgeport, Conn.; Myron L. Daggett, Jr., Piasecki Helicopter Corporation, Morton, Pa.; Clifton P. Idyll, 10 Wyoming Drive, Fawn Hills, Huntington Station, N.Y.; Willem J. Klaassen, Box 276, Northport, N.Y.; I. Warner Knight, 2241 South 5th, Arcadia, Calif.; Bjorn Lund, 6 Robert Court, West Orange, N.J.; Eugene A. March, 29 Richleu Drive, Camillus, N.Y.; Commander James W. Neighbours, Aircraft Division, Bureau of Aeronautics, Navy Department, Washington 25, D.C.; Carl S. Oldach, Greenville, Del.; Alexander S. Poskus, 2524 West Marquetta Road, Chicago 29, Ill.; Arthur S. Spear, Sperry Manufacturing Company, 52 Salem Street, Providence, R.I.; Yasuo Tani, 17 Chittendon Avenue, New York, N.Y.; Ross D. F. Thompson, 2128 Rimpan Boulevard, Los Angeles 16, Calif.; James K. Tyson, 2311 Churchill Road, Silver Spring, Md.; Rodrigo Uribe, care of Coltejer, Medellin, Colombia; David K. Wang, 330 South Craig Avenue, Pasadena 10, Calif.; John P. Webber, 203 North Pleasant Street, Amherst, Mass. — IVOR W. COLLINS, *General Secretary*, 28 Sherman Road, Greenwood, Mass. JOHAN M. ANDERSEN, *Assistant Secretary*, Saddle Hill Farm, Hopkinton, Mass.

## • 1942 •

A merry Christmas and best wishes for a very happy and successful New Year to you and yours.

Today's capricious Boston weather felt more like boat painting season than skiing times, but I have no doubt there will be plenty of snow hereabouts between deadline and delivery dates. To the schussboomers: Well-covered trails, cold nights, and sunny days, and lots of hot toddys before the fire in the evenings.

From the DuPont Company in Wilmington, Del., comes a note that Frederick W. Gander has been promoted to research supervisor at the company's Film Department Research Laboratory in Buffalo, N.Y. Since receiving his M.S. degree in 1946 Fred has been a chemical engineer in polychemicals, first at the Arlington, N.J., Works, and then at the Experimental Station in Wilmington. Fred, Hazel, and family are now living in Williamsville, N.Y.

By indirect word we have learned that Jack Flipse is a professor at the New York State Maritime College, Fort Schuyler, N.Y. And by similar devious channels we have been informed of the promotions of Captain Hayden L. Leon, U.S.N., now at the Naval Air Rocket Test Station, Lake Denmark, N.J.; of Captain William N. Richardson now of Fort Worden, Wash.; of Colonel Jacquard H. Rothschild now of the Chemical Section — Hq. A.F.F.E., care of Postmaster, San Francisco; and of Colonel Richard C. Gibson. Dick has joined the Air Research and Development Command in Baltimore, Md.

Of special interest in the notes from the Alumni Register is the news that Lawrence H. Aller has moved from California to the University of Michigan where he has been appointed professor at the University Observatory. We wish to record that the former Miss Natalie E. Caldwell is now Mrs. Philip E. Sheridan, residing in Cambridge, Mass.

The record for the biggest change of the month goes to Mrs. Lisa Minevitch Finney who has just moved from San Francisco to Rome, Italy. Other less distant changes of address are: Edward R. Berry to La Grange, Ill.; Commander William W. Brown to Mare Island Naval Shipyard, Calif.; Commander Jay V. Chase aboard the *U.S. Talovana* out of San Francisco; Wesley R. Floyd to Ridgewood, N.J.; Robert A. Frost up to ski country in Waterbury, Vt.; A. Paul L. Hotte close by to Needham, Mass.; Harold L. Jaffe has gone west to Cleveland Heights, Ohio; Captain David F. Kinert (U.S.N.) has recently been promoted and assigned to Norfolk, Va.; Charles H. Lawrance is now in Los Angeles; John R. McClain to Olmstead Falls, Ohio; Lieutenant Commander Bernard W. Moulton is the resident naval inspector of Ordnance, care of Arma Corp., Roosevelt Field, Garden City, N.Y.; Robert J. Shafer has gone to Atlanta, Ga.; Jackson B. Wells, Jr., to La Ove, Mo.; William R. Wilcox moved Texasward to La Porte; Max A. Woodbury is now in Salt Lake City; and Ray O. Wyland, Jr., is now in Indianapolis.

A memo to pass along to your Tech neighbors — the Alumni Fund is in full swing and appreciates the support of every Alumnus. Those of you who get to Cambridge are certainly more fortunate in being able to see firsthand all of the new laboratories and facilities that are under construction. As an added feature, any and all who are within hailing distance of the M.I.T. Faculty Club (penthouse of the old Lever Building) are cordially invited to attend the meetings of the Alumni Council. Dates are usually on the last Monday of the month and the cocktail lounge opens up before 5:30 P.M. Seen recently at these sessions were Charlie Speas, our Vice-president, and George Schwartz.

Your Secretary has changed positions for the first time since April 1942. We are now consulting in optics and the mathematical analysis of complex languages such as Chinese, Devnagari, and Hebrew for the Graphic Arts Research Foundation and Photon, Inc. The latter firm is manufacturing the Higgonet-Moyroud Photo-Composing Machine about which articles have appeared elsewhere in The Review. In what spare time is left out of the weekly 168 hours, we are associated with the Hauman Instruments Company of Watertown, manufacturers of electronic control equipment and electronic flash units for photographic use.

The review editors have promised lots more space if we receive lots more mail. Here's to good luck in 1954 and let's put your achievements and family news in print. — LOUIS ROSENBLUM, *Secretary*, Photon, Inc., 58 Charles Street, Cambridge 41, Mass.

## • 1943 •

Somehow I don't think it's fair to skip an issue of The Review just because there is no news for the class notes. In my opinion, receiving no news at all is something to write about, perhaps even in capital letters. For this month's notes I received no newspaper clippings, but I did receive 10 change of address notifications, which follow.

Richard B. Adler now lives on Holden Wood Road in Concord, Mass.; Ira G. Cruckshank is at Orchard Place in Stoneham, Mass.; Rafael R. Feuerring lives in New York City, and so does Sherman P. Sackheim; Virgil E. Otto lives on Fair Elms Avenue in Western Springs, Ill.; James T. Lynch, Jr., resides in Bethlehem, Pa.; Jim Holt, Jr., is now living in North Caldwell, N.J.; William L. Sammons is now in Charlotte, N.C.; Commander Frank W. Taylor is in Norfolk, Va.; and John E. Ward has moved to 15 Robinson Street in Lexington, Mass.

Jim Hoey, Jr., just returned from a trip to Cleveland, Ohio, where he saw Frank Swenson. Frank is a first-year student at the Medical School of Western Reserve, which endeavor is most laudable, for at the same time he still operates a prominent restaurant business in Akron. The Swensons became parents of their fifth child recently, this one a girl.

I would appreciate any news items you could sent along, such as births, marriages, job promotions, and so on. If you wish, you may write about what Santa Claus brought you for Xmas, I'll print it. — RICHARD M. FEINGOLD, *Secretary*, 49 Pearl Street, Hartford 3, Conn.

## • 2–44 •

A wealth of information on the doings and whereabouts of our classmates has arrived via Bob Peck, and the questionnaire Bob sent out in the Class Agent's letter. Bob reports that the initial returns were gratifying, and that they are still coming in at a satisfactory rate. I am interested in seeing the replies continue for the entirely unselfish reason of receiving the classmates' questionnaires — so if you still have Bob's letter on your desk, how about getting it off to Cambridge, today?

Arnold Mackintosh dropped a line from Rochester, N. Y., where he is now with Eastman Kodak. Mac advises that Uncle

Sam required his services for 18 months (not voluntarily, of course), and he was stationed in the Rochester Ordnance District.

The Mackintosh family consists of three children — two boys and a girl, the girl having arrived just this September. In order to house this brood, it was necessary for Mac to move into his partly finished house in '52, and it seems he is just putting the finishing touches on it now. Mac writes that he expects to meet you at the reunion in June.

We regret to pass the news along that Stan Skelskie has been in the hospital since August with an attack of polio. Stan's address is: 23 Kent Street, Westfield, N. Y., and I know that Stan would like to hear from his friends of the Institute. Lots of good luck, Stan, and a speedy recovery.

An interesting column came in from the Milwaukee, Wis., *Sentinel* concerning Jack Hunn. The Arrow Engineering Company is an outfit formed by Jack and a partner in 1947 to service and repair laundry machinery. Starting with the grand sum of $500 cash and a tool box, the company has built up the volume to the point of $100,000 this year. Their original quarters were in the basement, then to garage, and then to a 3,000 square foot building they put up. Again, this plant is too small, and the boys have an addition planned in the near future. The outlook is bright for the fledgling company, and with addition of a line of new equipment to sell plus the service, I am sure they will continue to grow.

Felix Palubinskas has recently been appointed professor in the engineering division of Lowell Technological Institute to take charge of the preparation of the electronics course at the college. Felix has obtained an M.A. from Harvard in 1947; a Ph.D. from Iowa State College in 1952. During the interim of getting these degrees, Felix whiled away his spare time at the Manhattan Project, M.I.T. Instrumentation Laboratory, Naval Ordnance Laboratory, the Atomic Energy Commission, and the Los Alamos Scientific Laboratory. When does the man sleep?

A note from Bob Fisher places him in Philadelphia, with the V. V. Fittings Company, a manufacturer of electrical conduit fittings. The last time I saw Bob was at the Alumni Banquet in '52, and he was a captain in the Army. When did you get out, Bob?

Eddie Roos is another definite for our June reunion, and he writes: "Bobbie and I bought a house in Plandome, N. Y., and are also the proud parents of a two-week-old son, Andrew H. I don't recall if I told you about our marriage which took place in service, August, 1951. I was recalled to active duty in March, 1951, and joined the 143rd Tank Battalion of the 43rd Division, and was sent to Germany in October. Luckily, Bobbie was able to join me in Munich two months later, and we had a sort of second honeymoon between maneuvers. We bought ourselves an M.G. and proceeded to tour the countryside on my off time. Finally, in July, 1952, we returned to the States aboard a troop transport, and I was discharged. Since that time, I have been associated with my father in real estate here in New York City. I see Duke Kahl occasionally. He has a house up in Wilton, Conn., and for a few weeks it appeared we might be neighbors. Bill Selke is a professor at Columbia, also Fred Hoopes, but I haven't seen much of them since early spring. Bill is married and has a place in New Jersey."

Bob Plachta recently bought a house in Wellesley Hills which practically makes us neighbors. Bob left the Institute with the R.O.T.C. in June of 1943, and after sweating out Basic Training and O.C.S., he wound up as production engineering officer in Cleveland Ordnance District. Emancipated in December, 1945, he returned to M.I.T. to get his degree in Course XV in September, 1946. From the Institute, Bob went to Filene's in Boston as the assistant to the operating superintendent, and then back to the Institute as administrative assistant in electrical engineering where he has been since 1950.

Bob took time out from purely prosaic matters in 1947 to woo, win and marry Anne M. Schaeffer, a Wellesley graduate. This past summer, Bob and spouse took a 14,000-mile auto trip throughout the great U.S.A. Presently, Bob and spouse are using the New York Stock Exchange as a hobby, and I believe it would be in order for all sympathetic classmates to send any shirts you or your wives wish to dispose of to Bob Plachta at the Institute. By the way, Bob also says he will attend the reunion in June. Another sure attendant for the reunion is Bill Ritterhoff, who plans to come up from Towson, Md., where he is working for Bethlehem Steel. With Bill on board, we all know that we can expect many a lively moment.

Again I wish to remind all that the reunion is June 11, 12, 13 at the Curtis Hotel, Lenox, Mass., and don't forget to bring the ladies. — BURTON A. BROMFIELD, *Secretary*, 608 Grove Street, Newton Lower Falls, Mass.

## • 1945 •

By now you must have completed a festive holiday season, equipped with not only pleasant family and social reunions but also with morning-after aches and groans as well! A belated Happy New Year to you all from your class officers.

With the new year we bring thoughts of our big 10th reunion — only 17 months away. True, June, 1955, may appear in the distant future to you, but to those of us who will be planning our fabulous 10th, 17 months is not too great a time to plan such an auspicious occasion. As things now stand, we have no more idea what you want in the way of a reunion than the man in the moon! Do you want an "on" or an "off" campus affair? If "on," we shall have to start making arrangements very soon; if "off," where do you want to go? North Shore, South Shore, Cape Cod, Scollay Square, or what have you? Do you want a stag affair, or do you wish (i.e., do your wives desire), a mixed reunion? A two-, three-, or four-day affair? These are just a few of the questions in our minds. True, we will send out questionnaires sometime soon, but how about dropping us a few ideas now?

We understand that J. J. Strnad is already talking up our 10th in the Cleveland-Pittsburgh region. In fact, Tom Stephenson says, J. J. envisions a tremendous motorcade starting in the midwest which will gradually gain momentum as it journeys across the plains and through the mountains on its way to the Hub. Fran and I were extremely sorry not to see Tom Stephenson when he was in New York in mid-October but good old Steve, our perennial bachelor so he says, had some news and a few tall tales. Tom is now Alcoa's general construction superintendent with headquarters in Pittsburgh. Steve supervises from specification stage to completion, the construction of Alcoa's many new manufacturing plants sprouting up throughout the United States. Steve had just spent an enjoyable Saturday evening with Al Oxenham, Jumper Gammon, J. J. Strnad and Wild Bill Humphries. Any of you that remember any of this motley crew will agree with me that no good came of that meeting in one of the finer Pittsburgh pubs! Guess what! Jumper's son is known as "Bumper"; J. J. weighs well over 225 pounds. That's it from Pittsburgh for now.

Old New Englander Bill McKay has left the shadows of Beacon Hill to relocate on Overbrook Road in Baltimore, Md. Upon his return to civilian life, Bill did not go back with Westinghouse, but he is still in the air conditioning field. Fran Carroll, ex-Navy, is now living in East Greenwich, R.I. No report on his employment but we imagine he is working at Quonset Point Naval Air Station a la civilian! It appears as if Marshall Byer is back at his old post at Corning Glass for we recently received an address change from Levittown to Painted Post, N.Y. Joe Batsche is out of the Navy and has relocated in Fort Pierre, Fla. Any of you who ever had the opportunity to see any of Jerry Patterson's drafting work while an undergrad would not recognize the skillful "pieces of art" he turns out these days! It must be the salary increase. As I recall, it was with extreme difficulty that one could stretch our $30.00 for 30 days. Fran and I spent a most enjoyable week end with Jerry and Lib Patterson in Binghamton the week end of the Cornell-Yale scoreless tie last fall. By now they should be the happy parents of a third child to join Tony, four and one-half, and Mark, two. Pat is much the same as in his college days, although we must confess he has suffered from a rising forehead as well as a shrinking in the hollow leg. Thanks again, Pat.

Probably many of you have either been recipients or forwarders of the so-called get-rich letters circulated to professional men last fall. Maybe they are still in circulation; but to those of you who never saw one the idea of the letter was to send a deuce to the top man of the list, send five similar letters to "friends," and to sit back for 10 days to await $6,250.00. What a deal! Yes, we received one from our old New Hampshire correspondent Bill Shuman. The old routine — no time to write a little news for us to publish, but time enough to get a few quick bucks. Seriously, we trust Bill was a successful recipient for we know that he would contribute much to this year's Alumni Fund.

There is no need of my reminding you to send your income tax deduction in, for Al Oxenham's fine letter of October or the November Alumni News Letter must have

prompted your remittance. Speaking of remittance how about just a little news for your Secretary, as we really had to strain this month. See you before Easter if we have any news! – CLINTON H. SPRINGER, *Secretary*, care of Firemen's Mutual Insurance Company, 420 Lexington Avenue, New York 17, N.Y.

## • 1948 •

As your Secretary was going down the corridor from his office on the 14th floor of the Field Building in Chicago, from an office at the opposite end came none other than D. Dennis Allegretti. Our conversation disclosed that he had just passed the bar examination in Illinois and was now a patent attorney with Bair, Freeman, and Molinaire, whose offices were a scant 50 yards from mine. The real coincidence is yet to come; we found that we both live in the same apartment building on the North Side of Chicago! Since that time we have seen much of Dennis, who, incidentally, was married on November 24 in Washington. Jim Adelstein and Ben Brettler were there, too, to help Dennis take the big step. Jim, incidentally, is now an M.D., or is about to become one, and Ben has been trekking back and forth to Nevada and Eniwetok taking official split-second photographs of our atomic explosions for his employer, Edgerton, Germeshausen and Greer. Bill Katz, another of Dennis' correspondents, is in Boston as an executive officer of Ionics, Inc.

And speaking of neighbors, two doors away from your Secretary on the same floor of the same apartment building lives Bud Bezark, who is now general manager of Irwin Engineering Company in Chicago. The three of us have considered forming the M.I.T. Club of '48 graduates at 3130 Lake Shore Drive. He and Jerry Krinsky, who also lives in Chicago and who is now general manager of the Embosograf Company of Illinois, manufacturers of advertising displays "partied" with us on Halloween.

Another old friendship renewed lately was with John Kirkpatrick, who opened a new midwest office in Chicago in September for the consulting firm of Arthur D. Little of Cambridge. Kirk and his wife now live in Northbrook, a suburb of Chicago, and have a one-year-old heir.

Our old reliable source of spot news, the newspaper clippings supplied us by the Technology Review, contained the following tidbits of information: "Russell Law has been with his father in the Russell Law Insurance Agency in Baltimore since his graduation in 1948. During the first six months of 1953, he sold $1,000,000 of insurance. His chief interest outside of the insurance business is in bird hunting which he does in southern Maryland. He has a number of bird hunting dogs." "Kay Brower received his Ph.D. degree from Lehigh University on October 11. He is an instructor in Organic Chemistry at Lehigh."

"Dr. Gerald L. Thompson of Princeton, N.J., formerly an instructor in Analytical Geometry and Calculus at Princeton University, has been named Assistant Professor in the Department of Mathematics and Astronomy at Darthmouth College." "Miss Antoinette Pauline Clemente, was recently married to Guido Frassinelli. The couple is now living in Dayton, Ohio." "Miss Nancy Austin became the bride of David Watts on September 19. The bridegroom is with the General Alloys Company as a design draftsman." "Miss Elaine Hamilton was wed to Second Lt. Robert Norman, Jr., on September 11. Until recently Lt. Norman was employed as an aeronautical engineer at the Glenn L. Martin Company, Baltimore." We will close with the regular monthly pleas: *Write.* – WILLIAM R. ZIMMERMAN, *General Secretary*, A. T. Kearney and Company, 135 South La Salle Street, Chicago 3, Ill. RICHARD H. HARRIS, *Assistant Secretary*, 26 South Street, Grafton, Mass.

## • 1952 •

To accompany your New Year's Day aspirin, here is a capsule report of our Class's doings. As usual, we shall begin with our "Hitchings" section. This month's report includes only three marriages; it looks as if the mating season of the "Genus Technologicus 52" has passed and hibernation has begun.

On September 5 Fred Ward and Lois Vachon were married in Newton Center, Mass. No word was received on the occupational side of Fred's life. On October 11 Al Kandel and Fran Wender were wed in Brooklyn, N.Y. The engagement of Fran and Al appeared in this column in July, 1952. Al, a lieutenant in the Ordnance Corps recently stationed with the Rochester Ordnance (Procurement) District, New York, is now on his way to Bremerhaven, Germany; Fran will join him there in February after she receives her degree from Jackson College. On October 17 Joan Spillsbury and Jim Stockard were married in Nashua, N.H. These newlyweds are now living in Boston, while Jim is working at the Institute across the river.

Dividends: A belated announcement has come from the Dunn Corporation (Bill and Emily) of Fort McClellan, Ala., that on August 17, 1953, their first dividend was issued, named William J. Many happy returns of the day to the new arrival.

Dippings from the Mailbag: Jim Strawn, a lieutenant with an Engineer Combat Battalion in Korea, writes: "I headed right to Fort Belvoir along with a lot of other Tech grads after graduation. After finishing there, Joan Lubman and I were married in September, 1952, with Gene Lubarsky'51 as best man. Thence to Columbus General Depot, but not for long. On December 30 I set sail for Japan, where I was stationed for four months at Camp Fujo. After I left there, I met Buz Urling, an ex-'52 man, at Camp Drake. He is now a lieutenant in the Signal Corps. From there to C.B.R. School at Eta Jima for two weeks where I discovered Charlie Carter and Arnie Kramer taking the same course. After that I headed up front with my present unit, where I arrived in the middle of June. A couple of days before the truce was signed, John Small arrived and was assigned to one of the other companies in the battalion.

"I also got the news that I had become a father as of June 24; it's a boy named David James. I also ran into Steve Chamberlin'51, who was in one of the Corps Engineer companies, and have heard tell that Bob MacCallum and Maurie Davidson are somewhere in the vicinity but haven't seen them as yet. M/Sgt. McAdoo, formerly at Tech, was first sergeant in the Division's Signal company. Had a passing chat one day up on the line. That's it, I guess – for now at least." Let's hear some more from you, Jim.

And from another soldier, this one a lieutenant from Fort McClellan, Ala., named Bob Briber: "Greetings from Fort McClellan, Ala. Isn't this a jim-dandy, peachy place? I am now in the midst of 15 weeks of school that they call the second Officers Basic Course. There is one consolation, though; off in the hazy future, on December 19, I graduate. I left Fort Riley on September 2, and whoosh I'm here. Dick Heitman is also here at school with me. Between a girl he's found in Birmingham and the happy hour at the Club on Friday evening, he's in a state of happy stupor.

"Bob Walsh is heading up your direction. He is supposed to report to the New York Chemical Procurement District of November 2. Manny Pandos is going to the Chemical Corps Engineering Agency at Army Chemical Center, Maryland. Chuck Sorenson is staying here with the Doctrine Board. Hal Galpern is also staying here but I don't know what he is going to be doing. Ol' Bill Dunn is holding down the Fort here teaching Radiological Warefare. Bob Damon is also here teaching Standing Operation Procedures for the Military Arts Section of the School. Fitzy Fitzgerald is also around here with the Extension Branch of the School.

"As of July, Bob Frey was working with Bethlehem Steel. Joe Moore is very enthusiastic about his job with Bayway Refinery in Baytown, Texas. Not so long ago, in May, I think, he and Glenna had a youngster, Joe, Jr. Cieko Neuhoffer spent last summer working with Gerry Laufs at Esso Refinery. This year Cieko and Ed Schwartz finish up their work at the 'B' School. I guess you know that the Laufs's household has been multiplied by 3/2 – Susan. Gerry writes that she has at last quieted down at night, quite a relief. Andy Wessel is at the 'B' School and representing the Class on the Alumni Council."

Odds and Ends: Bob Walsh did report to New York and has been sent out to the Chemical Corps Plants area in Natrium, Va., acting as a plant representative. Arnie A. Kramer, a Quartermaster Corps Lieutenant, is now with a graves registration unit in Korea. John Camp is back at the grindstone again at the Chemical Corps Materiel Command Headquarters, Baltimore, after his honeymoon.

That's it for the month. Here's hoping there will be more news to report next month. – STANLEY I. BUCHIN, *Secretary*, 150 Tryon Avenue, Englewood, N.J.

## • 1953 •

Tomorrow marks the beginning of our last week at Ft. Belvoir. In 12 weeks, we initiates to the United States Army have gained, in varying degrees, an insight into

the enormity of the task involved in training a modern, mechanized, fighting army. In the next 18 months, we green platoon leaders will have an opportunity to apply the principles to which we have been exposed. With the aid of a few experienced sergeants, the adventure should not be overly disastrous. The three M.I.T. men in the 83rd class have received orders sending them ultimately to the Far East. Doug Meyer and I are to report to Ft. Lewis on January 16. Doug is assigned to a construction battalion and I to a combat battalion. Jul Greenebaum has seven more weeks at a mechanical and technical school before leaving for the Far East. Another Tech man, Bob Cotton, reported to Belvoir last week as a member of the 88th E.O.B.C.

Through the mail (thanks to Jay Koogle's courtesy in forwarding your comments to me), Bob Gellert tells me that he is presently employed in the engineering department of the Boeing Airplane Company in Seattle, Wash. Bob Beale is working as a power plant engineer (Viking Rocket Project) for Glenn L. Martin Company. From Ed Hickey comes the news that he is working as a project engineer for Workshop Associates, a division of the Gabriel Company in Norwood, Mass. His duties include management of the mechanical division, specifically the design of radar and television antennae.

I do not know whether it has been the practice of previous secretaries to include notes on other than undergraduates who have received degrees in '53. Nevertheless, I believe that many of you are probably familiar with those who have received postgraduate degrees at Tech, and I am therefore including what data I have. Private Charles Drane is presently stationed at Fort Dix, N.J., and is assigned to Service Battery, 84th F.A. Bn. of the 9th Infantry Division. DuPont Company is now enjoying the services of Warren Baxter and Rudolph Carboni. Dr. Baxter is employing his talents in the polychemical department, and Dr. Carboni is on the research staff of the chemical department. Some of you math majors may recall Ernest B. Leach, who was awarded his Ph.D. this September. Dr. Leach is now a member of the staff at Case Institute of Technology.

Roman Chapelsky was one of the ushers at the wedding of James Dorsey and Katherine Bishop in Hackensack, N.J. on September 26. After a wedding trip to Bermuda, Jim and Katherine settled down in Boston where Jim is working as a staff engineer at Tech.

On this 22nd day of November, I conclude my last note to you from Fort Belvoir with a final note concerning Marty Wohl (ex-'53) who arrived at Belvoir last week after a three-months' stay at Fort Dix. From all reports, he did an excellent job while at Dix in keeping with the Tech tradition for turning out better than average men. Incidentally, the Tech men at the Engineer School have established a creditable record for themselves in our class, standing among the top 10 per cent.

As you receive this issue, I sincerely hope that your Christmas has been a memorable one, and that the New Year will hold many joys and triumphs for you all. Any notes, comments, or suggestions for the new year will be greatly appreciated. — VINSON W. BRONSON, JR., *Secretary*, 33 Wooster Heights, Danbury, Conn.

# "POT HOLDER"- Industrial Style

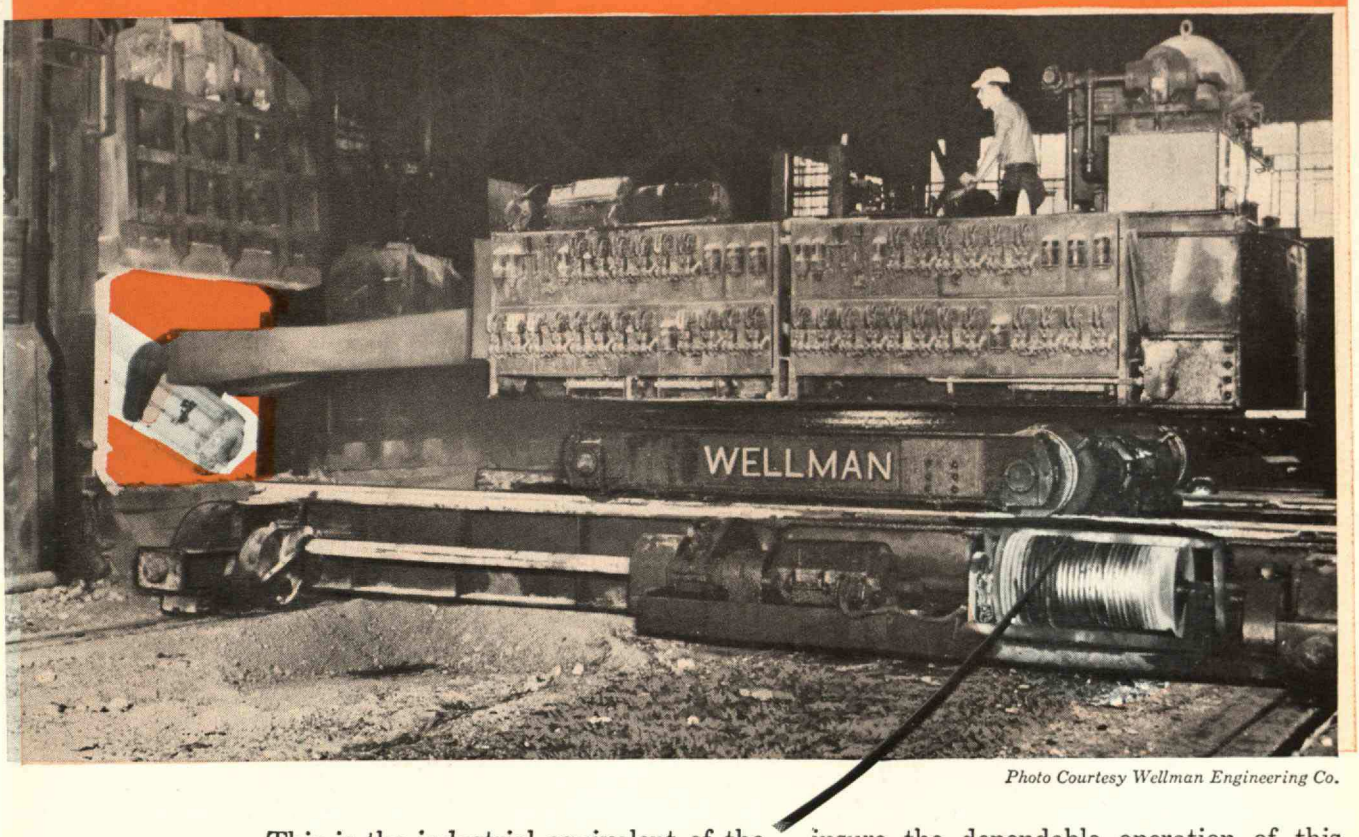


*Photo Courtesy Wellman Engineering Co.*

This is the industrial equivalent of the domestic pot holder. The charging and drawing machine picks up heavy ingots and puts them into and removes them from the furnace.

Overhead trolleys, as well as third rails, are frowned upon as sources of power because of safety reasons and so the steel mill wisely chose TIREX Cables for the important job of supplying electric power to this machine.

The user knows better than anyone else how important this machine is to his operation. So he uses cured-in-lead TIREX to insure the dependable operation of this charging machine. The cable is subjected to heat, to flying sparks, to oil, abrasion and other harmful agents. It is reeled and unreeled all day long. Even this doesn't bother the Selenium Neoprene Armor.

Isn't the fact that this steel mill depends upon TIREX Cables ample evidence of their superiority? Doesn't this mean you could profit by their experience? We think so, too. Why don't you specify and be sure you get TIREX for every type of portable cord or cable operation? You will not be sorry you placed your faith in TIREX.

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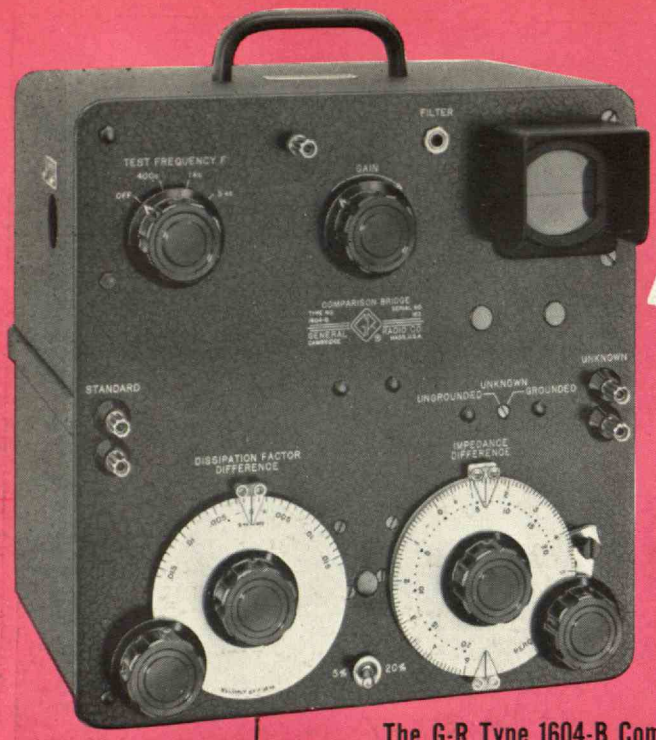


The G-R Type 1604-B Comparison Bridge

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### FEATURES

★ Instrument is completely self-contained and ready for operation — includes internal oscillator, bridge circuit and high-gain non-linear amplifier terminated in a cathode-ray-tube detector.

★ Three Measuring Frequencies — 400 c, 1 kc or 5 kc, selected by panel switch.

★ Two IMPEDANCE DIFFERENCE Dial Ranges — 0 to ±5% range for accurate measurements; 0 to ±20% for determining whether components are within the common 20% tolerances.

★ Accuracy and Range of Impedance Measurements

The range over which the basic ± 0.1% accuracy applies for resistors, inductors and capacitors is given below. At the more extreme values of impedance, measurements are less accurate.

| Frequency | Resistance | Inductance | Capacitance |
|---|---|---|---|
| 400 c | 2Ω to 20 MΩ | 2 mh to 1500 h | 100 $\mu$f to 50 $\mu\mu$f |
| 1 kc | 2Ω to 20 MΩ | 1 mh to 250 h | 30 $\mu$f to 50 $\mu\mu$f |
| 5 kc | 4Ω to 2 MΩ | 200 $\mu$h to 10 h | 2 $\mu$f to 50 $\mu\mu$f |

On the 20% deviation range, accuracy is ±0.5% over the same impedance range.

★ DISSIPATION FACTOR RANGE and Accuracy

| Frequency | Range | Accuracy |
|---|---|---|
| 400 c | ±.006 | ±(0.0002 + 2% impedance diff.) |
| 1 kc | ±.015 | ±(0.0005 + 2% impedance diff.) |
| 5 kc | ±.075 | ±(0.0025 + 2% impedance diff.) |

★ CRO visual Detector — horizontal band of light is used as the indicator — highly non-linear detector amplifier keeps indication on scope over wide ranges of unbalance — continual resetting of gain control is eliminated.

★ Zero Adjustment — adjustable index mark on scope can be offset and locked to compensate for deviation of the standard from the desired nominal value — permits use of any component as a standard of comparison.

★ Anyone can be taught to operate the instrument in a very short time.

★ Measurements can be made with unknown grounded or ungrounded, as desired.

★ Dimensions—12" x 14¼" x 10"; Net Weight is 22½ lbs.

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